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ARMED FORCES

Shaposhnikov on Role of Military in October Crisis

94U M0097A Moscow OSHCHAYA GAZETA
in Russian 15-21 Oct 93 p 8

[Interview with Marshal of Aviation Yevgeniy Shaposhnikov, by Yelena Dikun, place and date not given: "The Army in the City—The Final Argument of the President"; "Marshal of Aviation Yevgeniy Shaposhnikov on the Participation of the Military in the October Events"]

[Text]

[Dikun] As we know, Yevgeniy Ivanovich, you are no longer working. But was your military experience and knowledge put to use back in October?

[Shaposhnikov] When the confrontation had just begun, I got a call from Rutskoy's office. They tried to persuade me to join the defenders of the White House. Naturally I refused. On 3 October, I went to the Kremlin in the evening on my own initiative and placed myself, so to speak, at the complete disposal of Viktor Chernomyrdin. I don't mean to say that he came to me every minute for advice, but I did spend the greater part of those days in his office.

[Dikun] When marshal law is proclaimed, should the Army take part in resolution of the conflict or does the whole weight lie on the shoulders of the militia and the state security organs?

[Shaposhnikov] In general I'm opposed to using the Army in internal political conflicts, because that can go too far. I have always said that we should not use the military against the people; inside the state the peace-keeping organs, Ministry of Internal Affairs, and the internal troops should safeguard the security of the citizens. The Army has quite different tasks. However, when the "White House people" were rushing through Moscow like a whirlwind, and the militia and the internal troops proved unable to pacify them, I could justify the fact that the Army had to intervene in events.

Such assistance from the troops has been provided for by the Law of the Russian Federation on Emergencies. When the country is on the brink of war, all are subordinate to one person and act in his interests. The supreme commander-in-chief has the right to issue such an order.

Incidentally, when I was Minister of Defense of the USSR, I inquired of the Ministers of Defense of France and Italy how their armies would act in similar situations. The way it is in the West, the army usually stands aloof, but if a real danger to the citizens arises, they guard certain installations.

[Dikun] But this is by no means the first time that our Army has been drawn into political conflicts. I have in mind Tbilisi, Vilnius, Baku.

[Shaposhnikov] And each time then the higher political leadership disavowed it all (although we know that it was their initiative), assigning all the blame and responsibility to the Army and thus imperiling it. But I would not draw a precise parallel between those events and the ones in Moscow. There, it really was armed forces involved in politics, while in Moscow they were thrown against a raging mob, *Makashovites* and *Barkashovites* fighting an unjust fight. The Army was not sent against a peaceful demonstrating people, but against armed thugs. There is a big difference.

[Dikun] But why was the Army silent so long? It gives the impression that it was simply waiting to see which way the scales would tip.

[Shaposhnikov] For a military man it is very hard to make a decision to act against his own people, whoever he is, and no one would undertake this on his own initiative. Remember how in Novocherkassk some soldiers and officers refused to use weapons against demonstrators. Again, it is very hard for an army commander receiving such an order from the president to organize such an operation. The army is a great cumbersome object, a powerful thing, but its people are absolutely untrained in suppressing conflicts in the city; they operate to kill. Army units can do even greater evil. After all, in the heat of battle you don't stop to think who is right and who is wrong. But if the innocent suffer, the military uniform will be besmirched. Probably all this prevented the quick and efficient introduction of troops into the city.

[Dikun] The commander-in-chief gave the corresponding order to the Army in the middle of the night, but the troops appeared only at dawn. Why so late?

[Shaposhnikov] First of all, calculate how much time was required by the units in Naro-Fominsk, for example, just to reach Moscow. Second, I repeat, it was necessary to plan the operation, how the troops were to behave in the city, and to assign them a specific, clear-cut mission. For example, in August 1991 the coup plotters had the goal of simply sending units into Moscow, setting them up the streets and thus showing that the Army was on their side. I was present when Yazov formalized the mission: "There will be people who will throw themselves under the tanks, so show maximal caution and restraint, and shed no blood." But now actions were also needed, in addition to the show of force. Remember how back in August 91, by evening boys and girls were already sitting on the armor of the tanks, eating ice cream with the soldiers, and drinking wine. So it is clear that those who were now receiving the order to act were sitting, thinking, and writing out what each specific tank, infantry fighting vehicle, soldier and officer had to do.

[Dikun] In an interview with VESTI, Pavel Grachev denied responsibility for the delay and blamed it on the president, saying that if the latter had given the order to send in troops earlier, there would have been fewer casualties. What was the president waiting for then?

[Shaposhnikov] The president was not delaying. I repeat, it was very hard to make such a decision. Probably he himself had to be convinced that the forces of the internal troops or Ministry of Internal Affairs were clearly inadequate to suppress the rioters. In addition, I think Yeltsin feared the consequences of sending units into the city, because this was the final argument.

[Dikun] As you see it, what military forces were the defenders of the White House counting on, and why did these not support them? After all, according to MOSKOVSKIYE NOVOSTI the Air Force Commander-in-Chief Deynekin and General Gromov were reassuring Rutskoy—saying Sasha, don't worry, we're with you.

[Shaposhnikov] The prestige of Rutskoy and Achalov in the Army has been greatly exaggerated. These were presumptuous people who very often passed off their desires as facts. Rutskoy's popularity largely fell after he entered into open conflict with the president while remaining vice president. A military man does not act like that. It is hard to say whether there was real force standing behind the defenders of the White House. But be that as it may, the main error which they made and which turned their adherents away from them was that they allowed the infiltration of extremists, and were the first to spill innocent blood. Our Army may emotionally support or not support someone, and do so to the depth of its being, but when it receives a clear order, it generally has no doubts.

As for the Air Force CINC Deynekin, I would not interpret his words as unconditional support of Rutskoy. It was simply that being associated with him by specific relations, he could not coarsely and unequivocally send him on his way. But when it came down to it, Deynekin threw off all sentiment and proved that he had only one minister of defense and one president.

[Dikun] However you look at it, in the final analysis the president is greatly obliged to the Army. He is in its debt now, so to speak. Can one expect that the Army will take advantage of this and put pressure on the president, dictate its conditions, essentially go out of control?

[Shaposhnikov] Only extremist-minded officers could think that, as if to say they protected the president and he has to pay the bill now. I think that our military men have the strength and wisdom to refrain from that. If the president in turn feels himself to be in a debtor role, cracks and friction will arise between him and the Army. The consequences can be far-reaching. So that this not occur, on the other hand, the military must be more modest now. It seems to me that a normal officer or soldier regrets that he was drawn into this conflict and now desires only one thing, that it not be repeated. This is a black mark on the White House, and a mark on all of us, on Russia.

[Dikun] Unfortunately, Marshal Shaposhnikov did not dot all the i's in the question of why the Army was delayed. Meanwhile, several different versions having to do with the behavior of the military are circulating.

According to the first, the Defense Minister Pavel Grachev did indeed assume a wait-and-see attitude out of political considerations. As has become known from well-informed sources, Grachev, who more than once stated in public that the Army was prepared to cast its lot with the president, despite all admonitions refused to report to the Kremlin on that fateful Sunday. As Gennadiy Burbulis noted, "Grachev is letting us down for the second time now." It was no accident that on that night the candidacies of persons capable of replacing the defense minister were considered at the very highest level. In order to avoid introducing dissension in the Army as well, it was decided to put off all personnel changes until later.

However there is another version of events. For the Defense Minister the question was not whom to support but when to act. Minister Pavel Grachev was waiting for the MVD forces and the peacekeeping organs, whose job it legally was, to act. He feared that if he was the first to show initiative, the Army would not understand, and in the eyes of his colleagues he would seem to be a "butcher." But during the night, when public opinion was ready for the arrival of the Army (and conversely, it would not have forgiven the Army if it had remained aloof), and VESTI asked directly from the television screen, "Where is the Army?" Grachev's hands were untied and he immediately began to take action.

According to a third version, it was not even a matter of deadlines. The military maximally postponed the moment of introduction of troops into the action, fearing that under the city conditions this would mean many casualties.

But be that as it may, it is clear that because the Army arrived late, blood was shed in Moscow. True, it is not clear who is responsible for this.

POLICY

Group Drafting New Regulations

94UM0104A Moscow KRASNAYA ZVEZDA in Russian
3 Dec 93 p 2

[Major-General Aleksandr Arsenyev, head of working group charged with drafting new regulations, interviewed by Colonel Gennadiy Miranovich: "Timely Subject: Regulations the Army Will Live By"]

[Text] Interest in this subject has risen once again after it was learned that the previous deadline for drafting the permanent General Military Regulations (1 March, 1995) was being reduced by more than a year. The details can be found in our military commentator's discussion with Major-General Aleksandr Arsenyev, head of the working group charged with drafting the regulations and head of the Main Military Educational Directorate's Program and Regulations Administration.

[Miranovich] Aleksandr Semyonovich, as I understand it, a "transitional period" from provisional to permanent regulations was also needed in order to analyze proposals for improving them. Has the work now been completed?

[Arsentyev] You are correct in saying "in order to analyze proposals." For the need for such a period stemmed primarily from the lack of an appropriate legislative foundation. Now that virtually all the laws essential to the normal functioning of the Armed Forces have been enacted and now that we have the Basic Principles of the State's Military Doctrine and find ourselves on the threshold of adopting a Constitution, there is a realistic possibility of having the permanent regulations in place next year. This also makes sense in that the provisional regulations have been tested in the forces and, in specialists' opinion, have demonstrated their viability.

[Miranovich] One could also add that there is a catastrophic shortage of the provisional regulations, which were published in limited numbers, in the Troops and even at military educational institutions. And attitudes toward them—like attitudes toward anything provisional—are mixed, to put it mildly. Hence the ignorance of the regulations' provisions and even disregard of their requirements. However, let's return to the draft permanent regulations and proposals for improving them. Are they very different from the regulations under which we have operated since 1 January of this year?

[Arsentyev] In accordance with the Russian Federation President's directive, we drafted the permanent General Military Regulations and in May (1991—G.M.) forwarded them to the troops and the Ministry of Defense Main and Central Directorates. After that we received almost 2,000 comments and proposals. They were all reviewed recently by the Armed Forces commission on regulations, which is headed by the Chief of the General Staff.

As for changes, it must be borne in mind that we used the provisional regulations as a foundation for the drafts that are being considered. And the former, as we know, did not arise out of a vacuum. No matter what changes have taken place in the state and army, the military regulations must summarize the experience amassed over centuries.

[Miranovich] Still, you had almost 2,000 proposals.

[Arsentyev] In most cases (53 percent), the proposals were comments of an editorial nature. But there were also, of course, quite a few proposals (almost 45 percent) that, in our view, fundamentally supplemented the drafts.

These proposals were aimed at enhancing combat readiness and the quality of soldiers' training, improving procedures for securely storing weapons and equipment, ensuring servicemen's rights and providing servicemen with social protection, enhancing their responsibility for carrying out their military obligation, improving the

organization and enhancing the vigilance of combat alert duty and guard service, etc. In addition, it was proposed that we delete from the draft regulations provisions that duplicate individual articles of laws on defense matters, as well as provisions that are, so to speak, of a declarative character. It is hard to disagree with this. At the same time, we believe that those provisions—regardless of whether they are present in legislative acts—that directly concern the organization of service, compliance with safety requirements, and servicemen's responsibilities and that take the form of category directives should be reflected in the regulations.

[Miranovich] Aleksandr Semyonovich, our readers are also interested in more specific questions, such as the following. The provisional Interior Regulations have no provision on military units' battle flags. Some readers ask why we don't introduce such a provision, as was the case in the 1975 regulations. That is one example. In general, it would be interesting to hear if only some brief comments on the other draft regulations.

[Arsentyev] Regarding a provision on battle flags. In our opinion, no such provision should be included in the regulations as yet. Our units' battle flags do not currently correspond to either our military or state symbols. Moreover, this question, in our opinion, should be dealt with not in the regulations, but in individual normative acts. We do, however, propose to codify in the regulations the ceremonial presentation of battle flags and orders to military units.

We also propose that the Interior Service Regulations clarify servicemen's rights with respect to using weapons (to repulse attacks on troop trains, truck columns, and individual vehicles). It would be useful, in our view, to include a clarification (article 77) to the effect that measures to prevent injuries and deaths should not result in a failure to accomplish a combat mission. In combat conditions, the practice of turning these measures into absolutes, with the result that combat missions go unaccomplished, can lead to even greater casualties and unwarranted losses.

There are a number of proposals aimed at clarifying various officers' duties. For example, in order to implement Article 16 of the Russian Federation Law "On the Status of Servicemen," it is proposed that chiefs of regimental medical services (Article 112 of the draft Interior Service Regulations) be required to provide medical services to members of servicemen's families. We propose that chiefs of regimental finance services (article 113) be required to administer mandatory state personal insurance for servicemen in the event of their death, disability (injury, contusions), or illness while performing military service (or attending military training sessions).

As for the proposals regarding the draft Disciplinary Regulations, it should be pointed out that most of them (22 percent) were aimed at strengthening military discipline and law and order in the forces and at ensuring that

soldiers observe regulations in their dealings with each other. Some of them were adopted. Specifically, we support the proposal to delete from the regulations the incentive of granting conscripted servicemen leave from their units ahead of schedule, since every serviceman now has the right to one leave per week.

[Miranovich] Do the regulations contain any special directives for soldiers and sergeants serving under contract?

[Arsentyev] After a comprehensive analysis of all aspects of service, we came to the conclusion that it would be best if this category of servicemen too were subject to the overall requirements of the regulations. It is proposed that the Disciplinary Regulations set forth the incentives and penalties that can be applied to them.

Now let us return to the other proposals. It is proposed that the Manual of Garrison and Guard Duties (Article 15) include an amendment under which the military commandants of Moscow and St. Petersburg be accorded a special status. In our opinion, it would be useful to grant the Chief of the Military Motor Vehicle Inspectorate the power to ensure that vehicles are used for their intended purposes, since military vehicle inspectors are always capable of providing him with the necessary information. We also consider it useful to include in the regulations a provision authorizing officer and warrant officers in charge of guard details to be armed with assault rifles in special circumstances and by order of the garrison chief (military unit commanding officer). We propose to codify the possibility of installing televisions in guard facilities for all guards, and not just for establishment security units.

The fewest proposals concerned the draft Drill Regulations. They were mainly aimed at changing or clarifying certain drill techniques in order to improve drill training for personnel.

[Miranovich] Unfortunately, a newspaper article is not sufficient to touch on all the proposals, not even all the ones that were adopted. Nevertheless, Aleksandr Semyonovich, could you say a few words about the ones that were rejected?

[Arsentyev] In my opinion, it would be more accurate to say those that were deemed ill-advised. For example, we deemed unacceptable a proposal that the Interior Service Regulations explicitly state what a servicemen is not allowed to do. First, it is virtually impossible to do this. Second, if we intend to build a rule-of-law state, let's follow the rule that everything not expressly prohibited is permitted. It makes no sense, in our opinion, to charge regiment or division chiefs of staff with responsibility for ensuring that their units are fully manned, something that was also proposed. Given the situation that has come about in our country, full manning is beyond the control of these officers, unfortunately. The same can be

said of the proposal to charge patrol chiefs with responsibility for making sure that vehicle drivers comply with regulations for wearing uniforms. A patrol chief is simply unable to do this.

[Miranovich] In short, the proposals varied widely. Now that you have finished your job, so to speak, what happens to the draft regulations next?

[Arsentyev] The drafts have been presented to the Defense Minister. What happens next? The regulations can be approved by the country's President. But I would like to point out that this does not mean that our work on the regulations is finished, because putting them into effect will entail a whole series of both technical and financial factors. According to our calculations, 1.2 million copies of each set of regulations will have to be printed. That's not all that many if you consider the fact that they will be used by the Border Troops, other Russian Federation forces, military departments and civilian institutions of higher education, military commissariats, and so forth. Of course, every commanding officer (up to and including the commanding officers of sections and crews) will have a full set of the regulations. In the Army command, for example, there will be one full set for every five generals and officers. Academies will have one full set for every 10 students, and so on.

[Miranovich] What does this come to in financial terms? I remember that the limited edition of the provisional regulations in 1992 prices cost the Ministry of Defense 10.987 million rubles.

[Arsentyev] Specialists calculate that publication of the permanent regulations will cost almost 700 million rubles in current prices. But we have no choice, as they say, for the regulations are the law of army life, and both soldiers and generals must check their every step against them.

Military Issues Ignored in Electoral Campaign

94UM0119B Moscow KRASNAYA ZVEZDA
in Russian 7 Dec 93 p 2

[Article by Colonel Gennadiy Miranovich: "Doctrine and Life: Problems of Military Security in the Mirror of the Preelection Marathon"]

[Text] The fact that the problems of the country's defense and security and of military organizational development will not be among those most discussed in the current electoral campaign is something that one could expect. Today's voter, in the majority of cases a person who, to put it mildly, is not well off, thinks a lot more about his daily bread and about the problems that are felt directly by literally everyone, problems having to do with the economic and financial crisis. It is these themes that come across the loudest in radio, television, and the press.

But it is not just that military aspects are "practically invisible" in the programs of the election blocs, as

Professor Nikolay Abrosimov, chief analyst of the Analytical Center for Social and Economic Policy of the president's administration, noted in his article published recently in KRASNAYA ZVEZDA. Neither are they heard, with rare exceptions. At least many blocs and parties got through the radio presentation "We Listen, Think, and Elect" without the slightest allusion to these aspects either by political persons or by the journalists asking them the questions. Unfortunately this is the picture that we see not only in radio.

What is the explanation for this? Is it the inadequate competence of journalists in a sphere that for many years remained a "forbidden zone" for the broad public? I do not think so. There are many among us who have already gained considerable experience in this area. Practically every civilian newspaper has its own analysts, experts, observers, and other specialists on military questions. And does one have to be a "military specialist" to talk about a theme that we have all been hearing a lot about for some time? We were able, for example, to "extract" this admission (in IZVESTIYA, 19 November) from Gennadiy Zyuganov, chairman of the Central Executive Committee of the Communist Party of the Russian Federation, in the course of an "investigatory experiment," as he called his meeting with journalists: "I am convinced that powerful intellect, the best technologies, equipment, and machinery, a scientific-technical base, and the best organized collectives must be concentrated in the military-industrial complex."

Clearly it is primarily a matter of the aspirants to the title of people's elected representative or, more accurately, of the unsoundness of the military aspect of the program aims of many of them. In the best case, it all boils down to a declaration of love for military people (now almost everyone "loves" them) and to rather primitive assertions of the "necessity of giving serious attention to military matters...."

"Still I cannot understand how one could fire at the parliament with tanks....," stated an indignant Nikolay Travkin, leader of the Democratic Party of Russia [DPR], likewise in IZVESTIYA (24 November). It would seem that this would be the time to ask Nikolay Ilyich: What should be done to make such a thing impossible in our state? What must be the legal mechanisms regulating the actions and use of the armed forces? But you see how the political leader "floats" even in the simplest question—with respect to the reduction of the production of those same tanks—and you understand that it makes no sense to delve into the "military theme" here. There is no sense in talking about serious things at the emotional level.

Besides, there are different kinds of emotions. You can even run into things that were never dreamed about. For example, the well-known "military observer" Valeriya Novodvorskaya, in contrast to the leader of the DPR, is pleased when.... "the tanks hit the houses of the soviets." "I get a high from this," is how she shares her impressions from the events in October in the press (in the

newspaper NOVYY VZGLYAD, No 45). It would seem that these admissions do not directly relate to the election campaign. And they are given as "advice from an outsider." But what advice! Coming down on the just-adopted military doctrine of the state, the author appeals to its potential defenders: "The most effective means of putting the Army on a professional basis is to get rid of the draft entirely.... By avoiding the draft, you will perform a socially useful deed: Save the president, Yegor Gaydar, the reformers, and the bloc 'Russia's Choice!' The people will bless you: Money not spent on guns will be used for butter."

It is senseless and possibly harmful to quote this very purposeful agitation of an "outsider" with an indication of specific enemies who "are all around," against whom one must prepare crusades. Here, one can just wonder how fiercely people must hate Russia to declare their love for its president and simultaneously to abuse the military doctrine that he has adopted and the armed forces, although he is the commander in chief of these armed forces.

And the attempt of a certain "military journalist S. Sergeyev" to depict the Army approaching the White House on the black Monday in October appears no less blasphemous. "The Time of the Beast"—this is what his publication is called in the press organ of Naro-Fominskiy Rayon with the pretentious name OSNOVA. It is amazing what can be done in it by the little soldiers "with post-perestroyka brains," whose boots splash through pools of blood, and by the equally intellectually defective officers who give out interviews right and left to Western journalists and who pose in front of their photographic lenses with the background of the "battlefield." And at the end of the description there is this derisive reservation: "It was not my purpose to defame or humiliate anyone with these comments...." Why then, one asks, are you defaming and humiliating those who have died and those who, although they have remained alive, are by no means heroes? Do you really not see that even in the photo in your newspaper they have turned their backs to you?

But enough of this. These comments were not conceived to respond in public to the spiteful "outside adviser" or to the "military correspondent" of a rayon newspaper who is amused by the pain of Russia and her Army. Nor, by the way, are they meant as a reproach to those who, while seeking power, for some reason avoid the "defense themes." Military problems have never ceased to be part of our political life. Nor is there any escaping them now. It seems to me that the examples that have been given merely define more precisely the spectrum of relations to these problems with the background of the election campaign—from timid silence to militant rejection even of the notion of the need to defend the Fatherland. But to be honest, we are fed up with all of this, with superficial and incompetent judgements on matters of national importance. Today we very much want something else: Competence, constructive ideas even if they are only for the sake of argument, and a businesslike tone....

In this connection, I cannot fail to distinguish in the succession of numerous pre-election measures the recent "round table" on the problems of the security and defense of the country, in which Sergey Shakhrai, Aleksandr Shokhin, Aleksandr Kotenkov, and Gennadiy Melikyan participated. Officially the round table did not have the nature of agitation or an election campaign. But it was clear from the make-up of the main participants that this was a measure whose initiators were the leaders of one party—the Party for Russian Unity and Harmony [PRES].

The core of the conversation was military doctrine and life. Life is life: On the one hand, we face the necessity of maintaining the country's defense potential at a "level adequate to existing and potential military threats." On the other hand, there are the economic, demographic, and other severe realities of our time. As they say, doctrine proposes and life disposes. How can one optimize the needs and possibilities without causing harm to the state?

It would be naive to assume that some party or electoral bloc is capable at this moment of proposing an unequivocal solution to this "classic task with many unknowns," as defined by Prof. Mikhail Kasenkov (KRASNAYA ZVEZDA, 11 November). Shakhrai and his comrades did not have any unequivocal solutions either. "For the time being, one can only say that the combat capability of the armed forces is being maintained at the minimum critical level and that the state, government, and president need to make a great effort to see to it that the document 'Basic Positions of the Military Doctrine of the Russian Federation' becomes a working document," says Sergey Mikhailovich.

Nevertheless, the PRES and its leaders have their own vision of the priority directions of these efforts, whereby, which is of considerable importance, it is a vision based on the realities of life—economic, political, military, etc. In any event, here they sensitively detect the criteria and parameters below which we will no longer have a right to demand that the army carry out the tasks foreseen by the constitution and the military doctrine. Here, for example, is what Aleksandr Shokhin thinks about this: "If at this time we do not maintain the technological lines already in existence and the ties between suppliers and the producers of the final output, then within a year we will lose the possibility of producing first-class weapons." In the opinion of the leaders of the PRES, the concept incorporated in the doctrine "must be translated more quickly into the language of specific parameters of the state of the army and the military-industrial complex." This is not the case, they said, when the doctrine states that the immediate threat of the unleashing of direct aggression against the Russian Federation has declined significantly under the present conditions, whereas the obsolete mobilization plans require the preservation of all capacities of the military-industrial complex at such a level as though we are preparing for a

large-scale war. This complicates conversion and creates an atmosphere of nervousness and uncertainty at defense enterprises.

And in general, in the opinion of the participants in the meeting, those who think that one can achieve a significant economic effect through the mechanical reduction of military production or the number of servicemen are seriously mistaken. In particular, Aleksandr Kotenkov commented on the above-mentioned fable about butter instead of guns in this way: "It is necessary to discard the utopian notion that we can count on a reduction of the military budget in the next few years. This will become possible only when all those who have been discharged from the army have been provided for and the army itself is made to correspond to the positions of the doctrine."

In this connection, it was stressed that if the Constitution of the Russian Federation is approved on 12 December it will preclude the possibility of the appearance of laws calling for an increase in military expenditures without economic justification and coordination with the government, as was previously the practice. As for laws that have already been passed, in particular the Law on the Status of Servicemen, about which there continue to be all sorts of rumors despite official denials, it can only be improved; that is, it is possible to specify the mechanisms for its realization and the time and stages for the introduction of different positions. But this, as Gennadiy Melikyan noted, has nothing to do with what is happening in practice—delays in the payment of servicemen because of the lack of money, etc. The law has nothing to do with this. One must take to account those who are responsible for the timely allocation of funds from the Ministry of Defense.

It is possible that someone will say: Why is so much space being allocated to the presentation of the views of people from one party? I will stipulate right away that it is by no means a matter of any particular sympathies of the author toward the leaders of the PRES. Unfortunately, the mentioned "round table" was the only pre-election measure in which there was a more or less in-depth discussion of the current military problems in a direct setting. It is, in particular, more difficult for the military voter to judge the position and specific views of the representatives of other blocs and parties. If they also involve defense matters, then it is mostly in a fragmentary manner along with other problems, although constructive ideas are expressed, of course.

Take, for example, the "savings" policy of the bloc of the "Civil Union on Behalf of Fairness, Stability, and Progress" with respect to the military-industrial complex. Here they also incorporated the idea of gradual conversion, providing for a clear determination: Which enterprises of the military-industrial complex should be helped, where have there been sufficient personnel changes in the management, and who is not at all included in the military-technical policy of the state. The

PRES and "Civic Union" also have similar positions with respect to the formation of a military order, its financing, etc.

In the opinion of a number of experts, "Russia's Choice" rather soberly assesses the military-political situation and the related problems with the provision of the military security of the state. The bloc favors a reduction of the military presence abroad but its supporters are against a total withdrawal, which, in their opinion, would not correspond to the geopolitical realities. At the same time, it is thought that under the conditions in which there are many centers of armed conflicts near or adjacent to the territory of Russia it is possible to coordinate actions and to integrate the military power of Russia and the West in a single security system. At the same time, it is emphasized that the country must have adequate possibilities so that the armed forces will be capable of guaranteeing its security even if the situation changes drastically.

Representatives of the electoral bloc "Dignity and Mercy" and of the movement "Women of Russia" have made a lot of statements in support of the armed forces that pay attention to the social questions of soldiers and veterans and that show concern about the problems relating to the bringing of troops and forces up to strength and with the need to raise the patriotic education of personnel to the necessary level.

Alas, if the flood of preelection information is assessed overall, this does not yield an integrated and clear idea of the conceptual approaches of the various political forces, parties and blocs to defense questions. I would like to hope that the "military theme" will be heard more clearly in the remaining days before the election. And it appears that the voters should be advised to do one thing: To pay closer attention not only to the program statements of the leaders of the parties and blocs but also to what specific persons representing them say and do. And they should not be taken in by effective phraseology and extravagant declarations. They should try to find out whether the competing candidate for whom they intend to give their vote in their district has a real understanding of the armed forces, their role in the society, and other problems involving defense and security. Is he capable of broad thinking and does he understand precisely which laws are most needed today.... After all, the people whom we elect today will determine the fate of the country and of the armed forces during the coming years—the fate of all of us.

Need for Military Representation in Parliament

94UM0119A Moscow KRASNAYA ZVEZDA in Russian
8 Dec 93 p 2

[Commentary by Vladimir Yermolin under "Opinion" rubric: "Does the Army Need 'Its Own Man' in Parliament?"]

[Text] I know that some will be offended just by the question being raised. They will ask why the elected

representatives of the people should be divided ahead of time into insiders and outsiders, especially since all electoral associations and blocs are demonstrating an understanding of army problems and a broad approach to the resolution of defense matters in their program statements. In responding to such objections, one could resort to the experience of two years' work by the abolished parliament, but this method is not popular today. Although, believe me, the harsh and drawn-out debates about the draft bills in the "military package" in the former Supreme Soviet were least of all political in nature and most of all bore the marks of a clearly expressed interdepartmental fight.

During the days when various questions were presented that had to do with the armed forces, there was necessarily a conflict of interests between the Ministry of Defense, the Ministry of Finance, the Ministry of Education, and the Ministry of Social Protection of the Population as well as the Ministry of Communications, the Ministry of Transportation, and the Ministry of Nature.... But why enumerate them, I do not remember a case in which some "military" bill or other might have passed the first time without drawing the fire of some department. And it was none other than the corresponding committees and commissions of parliament that defended the interests of these ministries. It is probably sufficient for the readers of KRASNAYA ZVEZDA to remember that the invariable opponent of such draft laws as "On the Status of Servicemen," "On the Provision of Pensions to Servicemen," and others was People's Deputy of the Russian Federation Mikhail Zakharov, chairman of the parliamentary commission for social policy. And he did so from the positions of the reduction of the list of offered privileges and the size of pensions.

And this certainly does not mean that the representative of a "civilian" department is less able than a "military person" to think broadly. And it is all the more true that the arguments of Mikhail Lvovich with the parliamentarians from the Committee for Defense Questions and Security or the Committee for the Affairs of the Disabled, Veterans of War and Labor, and the Social Protection of Servicemen and Members of Their Families do not by any means characterize this respected scientist as an inveterate pacifist and hater of everything military as a matter of principle. The conflict of various interests in the lawmaking stage is simply unavoidable. And to suppose that in the new parliament a certain denominator of state interests will prevail that reconciles everyone is obviously fantasy, nostalgic sighs about the Supreme Soviet of the days of the communist like-mindedness.

Now about the interests of the Army. One may get emotional and stick to the formula "the people and the army are one" and consider the matter as closed. But the Army does have its own interest in the corridors of legislative power, just as there is such an interest for miners, teachers, and air traffic controllers. I will risk asserting that it is a rare professional association that is

not thinking today about putting its "own person" into the state Duma or, even better than that, several such persons. Why? Because the soul of a professional can rest better if he knows that a law regulating his labor and possibly determining his entire fate will be worked out and passed with the participation of other such professionals who know the nature of the subject other than through popular science brochures.

I would like to avoid platitudes in these "free reflections" of mine. Let us therefore leave in parentheses that which does not require proof, namely: That the interests of the military are truly inseparable from the fundamental interests of the people and all Russians—all of us are in favor of the dependable defense of our Fatherland and in having the armed forces be worthy of a great Russia. But to be fair, I will add that our public health, our railroads, our coal mining industry, and...must also correspond to a great Russia. It is easy to say that they already do. But nothing comes to mind other than the ballet and astronautics.

Thus, the Army needs its "own man" in parliament. He need not necessarily wear shoulder boards. But you must agree that knowledge of army life other than from hearsay will not impede a parliamentarian who desires to advance military legislation. Certainly we should make the reservation here that years in military service do not guarantee an active legislative career of the elected individual. I do not want to name names but one can find a lot of examples in which a deputy who got to parliament precisely under the slogans of defending the interests of servicemen did everything possible to "mold" his own political career, which itself certainly is not reprehensible, if this is done without speculating with the problems of the armed forces.

But however that may be, today the Army and Navy do have their own package of laws. And deputies who came out of the "depths" of the Army have put their hand to this. It is understandable that they did so in union with scientists and specialists in the Ministry of Defense, but in the case at hand not the least role was played by their service experience. By the way, even today you will find the names of some of them on the ballots. They include Aleksey Tsarez, Yevgenniy Kozhokin, Aleksandr Piskunov, Aleksandr Belashov, and Sergey Glotov.

Today we are already hearing speeches to the effect that our military legislation needs to be improved. There can be no objection to this. If there is a possibility of doing something better, then it must be done better. We will count on the bright minds of our legal experts (fortunately, we have many military institutes). We will also count on the bright minds of the deputies of the new parliament, who must formulate and improve the package of military laws. But even a slight familiarity with the lists of candidates from various blocs and associations makes one think that the process of filling a committee that will deal with defense matters will be marked by a tough fight among the parliamentary groups. For, let us say, the views on defense of the

representative of communists in this cabinet policy will inevitably differ from the views of a representative of "Russia's Choice," whereas a representative from the "Bloc of Arkadiy Volskiy" may disagree with both. So the bills will require some work!

In listening to the pre-election speeches and reading the program statements, we must not forget about our own interests, such as the extent to which the candidate or bloc meets the daily interests of the Army and defense as a whole. And of course it is a matter not just of the tenacious social and everyday problems of the serviceman. One does not live by bread alone. God, protect us against: Elected representatives whose unskillful economic policy will provoke discord in the country and propagate crowds of beggars, disfranchised, and criminals; against those who start conflicts between ethnic groups and press the gas of national exclusivity; against irreconcilable individuals of all kinds who mark the Russians with political labels and push the people to the barricades; and against schizophrenics obsessed with the desire to carry out foreign policy exclusively from the position of military superiority. In all of these cases, the weightiest and most ungrateful share goes to the Army—eternally responsible for the political adventures and stupidity of statesmen.

Yes, we will count on the bright minds of the deputies. But for the time being, until 12 December, our hopes are on the bright minds of the voters. On account of our profession, we military people are possibly less subject to pre-election passions than other strata of the population. But we too must make a choice. In the final analysis, one must remember that in giving our vote to some candidate or other we must live and serve under the laws that he, our specific choice, will write and pass along with the others.

Criticism of Conscription of Commercial School Students

94UM01204 Moscow IZVESTIYA in Russian 8 Dec 93
p 2

[Article by correspondent Igor Ryabov: "Conscription of Commercial VUZ Students Into Army—New Route to Universal Military Duty"]

[Text] In the current induction students are again being drafted into the army, for now, only from commercial VUZs [higher educational institutions]. As usual, "evaders" are pursued. They are dragged from their warm beds, relieved of their passports, deprived of their jobs....

The military says that "students are being inducted into the army from non-state institutions in accordance with the ukase on the new conscription." The president's ukase does not say a word about students, however. The military are following a directive issued on 25 July of this year and signed by Mikhail Kolesnikov, chief of the General Staff of the Russian Federation's Armed Forces. In it the colonel-general specifies that "full-standing" VUZs refer to those with "state accreditation."

Under the law "On Military Duty," which was passed on 11 February 1993 and took effect on 11 March, all students are entitled to a deferment from military service. Under the law "On Education" private and state higher educational institutions have equal legal rights. The privilege of deferment for students at non-state VUZs is specified even in Point 20 of Article 50 of the law.

Neither the president's ukase nor the government decree on the new conscription rescinded the provisions of these laws.

The term "state accreditation" used by Mikhail Kolesnikov in his directive is a new one in legislation.

Mikhail Kolesnikov began his directive with a reference to a decree of the Supreme Soviet, still functioning at that time. On 19 May 1993 the deputies approved an amendment to the law "On Military Duty." The Supreme Soviet specified that "educational institutions refer to professional educational institutions with state accreditation." Any organization acquiring the appropriate license is authorized to engage in educational activities. Not a single VUZ has "state accreditation."

The decree proved to be a good thing for the military. It became possible to replenish the ranks of the armed forces with students. The couple of thousand of "commercial" students has not been enough, however, and the military commissariats are complaining. Just why is the military against the reform of the armed forces, when it is apparent that they will get their complement of conscripts only following universal mobilization?

No one in the military even bothered to make a study of how many potential draftees are enrolled at commercial VUZs or how many of these VUZs there are. The New Humanities University is the only VUZ suffering from the triumph of directive authority. Its problem is just that it is totally dependent on the state. The other commercial VUZs are either former state institutions with dual status or independent correspondence schools which cannot boast of any living souls in their lecture halls.

At the New Humanities University almost 1,500 students are faced with the threat of being sent into the army. This is a drop in the bucket for the Russian army but a problem for the university.

The government, advocating reform in education and the development of independent educational institutions, is not in a position to protect the students of those very institutions from the directive attack by the general staff. Who is going to follow in the footsteps of Natalya Nesterova, president of the New Humanities University, when they see the obstacles she encountered in setting up the independent VUZ?

There is no difference between students of commercial and state VUZs today other than in the law. Many VUZs receive money for their education—state VUZs no less

than the commercial schools. Nor is there any difference in the quality of the education. The best professors are happy to join commercial VUZs.

The students beat off the army's attack during "perestroyka." The military are now taking a different tack, saying that some of the students are not really students. The esteemed generals are being crafty.

STRATEGIC DETERRENT FORCES

Reducing Military Confrontation in Arctic

94UM01114 Moscow MORSKOY SBORNIK
in Russian No. 8, Aug 93 (signed to Press 9 Aug 93)
pp 11-15

[Article by Rear Admiral (Ret) A. Yakovlev and Colonel (Ret) V. Sokolov, candidate of technological sciences. "Is the Ice of Distrust in the Arctic Melting?"]

[Text] M. Gorbachev's Murmansk initiatives (1987) were the first step in reducing the acuity of East-West strategic confrontation in the Arctic. Their purpose was to help solve a major problem—achieving radical reduction of the level of confrontation in the Northern Hemisphere, displacing suspiciousness and mutual accusations from this part of the planet by new measures of trust, and substituting confrontation by peaceful cooperation and interaction. A second no less important problem could also be solved on this path—utilizing the potential of modern civilization, and cooperating in the study and development of the Arctic with regard for national economic interests, and chiefly those of Arctic states.

As for limiting and reducing military activity in the North, the following measures were proposed:

- discussing the problems associated with creating a nuclear-free zone in Northern Europe, for which purpose the nuclear powers were to pledge not to use and not to threaten the use of nuclear weapons against states located within it. In this case our country is taking steps toward significant reduction—that is, toward dismantling part of the medium-range missile launchers in regions adjacent to this zone.
- supporting Finland's initiative to limit naval activity in seas contiguous with Northern Europe through consultation between the Warsaw Pact and NATO on reducing the scale of naval and air force activity in the Norwegian, Greenland, North and Baltic seas, and on extending measures of trust to them.
- examining the matter of prohibiting naval activity in mutually agreed zones of international straits and in busy shipping lanes.
- discussing a problem that is troubling the Arctic countries—the further existence of the nuclear test range on Novaya Zemlya (in this connection the Soviet Union declared that it could close this test

range now and forever if the United States were to agree to halt nuclear testing, or at least as a start, to reduce it to the absolute minimum in frequency and yield).

However, the reaction of our Western partners to these initiatives was ambiguous. It reflected a difference in approaches to the Soviet proposals on the part of both individual states and the West as a whole. The importance and novelty of the Soviet Union's proposals for solving Arctic problems, which imparted a powerful impetus to discussion and to finding productive solutions based on a balance of interests, were unanimously recognized. The appeal for cooperation in science and environmental protection also enjoyed universal recognition. In this case neutral Scandinavian countries—Finland and Sweden—expressed the most favorable reaction to the Soviet proposals, but the proposals for economic cooperation among Arctic states evoked only a cautious positive reaction, while proposals relating to security in the Arctic were met by a cold, guarded reception, and even tangible opposition. The greatest skepticism and, in general, negative attitude were displayed by the U.S. Its experts saw in this an alleged desire by the USSR to acquire advantages by restricting the sphere of activities of the U.S. Navy and NATO, without offering measures in return to reduce the level of operations by the forces of its own Northern Fleet.

Six years have passed since then. It can be asserted that international cooperation in economics, science and ecology has progressed significantly. Bilateral agreements were concluded for cooperation with Norway, the USA, Canada and Finland, the foundations for establishing the International Arctic Scientific Committee were laid, and the Council for the Barents-Euroarctic Region, the main objectives of which will be to develop the principles of, and provide coordination to, cooperation in economics, environmental protection, mining, creation of an infrastructure, and protection of the rights of the indigenous population, was instituted by Russia, Norway, Sweden, Iceland, Finland and Denmark in January 1993 in the Norwegian city of Kirkenes.

In addition, the Northern Sea Route was opened to international shipping and the first foreign vessels used it in 1990.

On the other hand, the results of implementing the Murmansk initiatives in the military sphere were less than modest. The question of creating a nuclear-free zone in Northern Europe remains open. The activities of NATO's joint naval forces in the Norwegian and Barents seas are inadequate to the decrease in activity of forces of the Northern Fleet that was so offensive to American experts. The quantity of Russian ships afloat is steadily decreasing, and the number of submarines on combat patrol has decreased significantly. However, NATO's intensification of reconnaissance efforts by our territorial waters evokes bewilderment on this backdrop. The USA's multipurpose nuclear-powered submarines continue to patrol in regions directly adjacent to bases of the

Northern Fleet on the Kola Peninsula, as is evidenced by the undersea collision of the American submarine "Baton Rouge" with our submarine in Russian territorial waters at the entrance to the Kola Gulf in February 1992, and by yet another violation of our territorial waters by an unidentified submarine on 25 March of the same year.

After these incidents the command of the Russian Navy communicated a proposal to the Americans on preventing submarine incidents. However, no changes probably occurred in their activity, as is evidenced by another collision, on 20 March of this year, between an American and a Russian submarine approximately 120 nautical miles from the Kola Peninsula. And although during the Vancouver Russian-American summit talks in April 1993 U.S. President B. Clinton declared the need for avoiding a repetition of such incidents in the future, judging from statements by officials of the U.S. Defense Department, the Pentagon has no intention to abandon its practice of shadowing Russian SSBNs.

The USA continues to actively study and equip Arctic theaters for military purposes. Its main research programs in behalf of its navy include "Acoustics of the Barents Sea," "Dynamics of Polynyas," "Mechanical Properties of Ice" and "Arctic Buoy Net." The results of sea-bed research are being used to predict the range of hydroacoustic observation and to reveal suspected regions of combat patrols by Russian SSBNs.

The antisubmarine actions of heterogeneous forces were practiced in recent years during cruises by American and English submarines beneath the ice (the "Pargo" and the "Tayelis" in May 1991). Using sonobuoys in polynyas and iceleads, Orion and Nimrod patrol airplanes participating in these exercises detected and tracked the "probable adversary's" SSBNs. Thus, the absence of a desire by the West to reduce the scale of activity of its naval forces in the Arctic is obvious.

Considering such uneasiness, our foreign experts feel that the leaders of the CIA and the Pentagon will insist on preserving the tracking and monitoring capabilities possessed by American reconnaissance forces. It may have been expected that the latest accomplishment in reducing strategic offensive arms—the signing of the START-2 Treaty in Moscow on 3 January 1993 and its forthcoming ratification in the Russian Parliament and the U.S. Senate—would be a new stage in improving military-political relations between the USA and Russia and sharply reducing the level of the Arctic's militarization. However, the significance of the naval component of our "strategic triad" will increase dramatically with implementation of the START-2 Treaty. This may evoke varied reactions to our peace proposals in the Arctic.

According to the START-2 Treaty, the arsenal of nuclear warheads in the naval component, aboard U.S. and Russian SSBNs, is to be reduced to 1,700-1,750 units by the year 2003, as compared to the present 2,800 units.

Russia's naval strategic nuclear forces may be basically left with nuclear-powered submarines of the "Typhoon" and "Delfin" classes, which are present only in the Northern Fleet (over 10 units). Submarines of older classes ("Navaga," "Murena," "Kalmar"), of which there are up to 50 units, will be retired from the Russian Navy.

Given all of this, over 50 percent of the Russian Federation's strategic offensive arms will be carried by SSBNs. An abrupt change in the ratio of the quantity of warheads carried by ICBMs and SLBMs will occur in the new structure of the Russian Federation's strategic offensive arms (it will be similar to the American structure). While this ratio is over two to one in favor of ICBMs today, after the reductions it will change in favor of SLBMs (1.7:1).

We can suggest in this connection that naval strategic nuclear forces—SSBNs—will continue to be the main component of the Northern Fleet. Their possibilities as a "deterrent weapon" will depend on the reliability and viability of SSBNs at sea on combat patrols, and when standing at bases.

Possessing a huge antisubmarine warfare system, the USA will naturally strive to "neutralize" the fighting potential of Russian SSBNs. But to what degree will this process be regulated, if at all, in the direction of reducing the level of military confrontation in the Arctic?

We can expect that under the conditions of political instability in our country and in other CIS countries that have nuclear weapons on their territory, given a simultaneous "shift" of Russia's nuclear potential in the direction of the naval component of strategic offensive arms, reconnaissance activity against our SSBNs by the American and NATO navies will continue.

Multipurpose submarines of the "Los Angeles" class will be used for this mission. In addition to ASW armament, they carry Tomahawk cruise missiles to be used against coastal strategic targets.

There were plans to use new, more heavily armed multipurpose submarines of the "Seawolf" class in Arctic waters. In the opinion of the Pentagon they will be capable of ensuring the U.S. Navy's superiority over our country's naval forces in the Arctic basin all the way to the second half of the next century. But with cessation of confrontation of forces in general and in the Arctic in particular, and in light of forthcoming reductions of naval strategic nuclear forces under the START-I and START-2 treaties, common sense took the upper hand—the command of the U.S. Navy decided to limit itself to commissioning the lead submarine of this class (in 1992).

The fact that sea-based cruise missiles carrying conventional warheads are not limited in their range by any international agreements is interpreted in American military circles in favor of further deployment of "Los Angeles" class submarines armed with Tomahawk cruise

missiles in the Barents and Norwegian seas. On the insistence of the American side, a range limit (of not more than 500 km) was determined for land and air-based missiles in the 1987 treaty on intermediate and shorter-range missiles.

Moreover, the prospects of using submarines carrying Tomahawk cruise missiles are fully consistent with reorganization of Western armed forces in connection with cessation of global confrontation with the former Soviet Union. The decreasing readiness for global nuclear conflict is being replaced by maintaining and increasing the readiness of U.S. armed forces for limited military operations such as Desert Storm in practically any region of the world. The capability for surprise massed use of cruise missiles from surface ships and submarines ("Los Angeles" class) against coastal objectives was demonstrated during this operation. The principal objectives were command posts, communication and observation facilities, missile positions and airfields.

In a subsequent military action against Iraq in January 1993 a missile strike against Baghdad suburbs (allegedly against a plant involved in the creation of nuclear weapons) was once again made with Tomahawk cruise missiles, launched this time only from surface ships of the U.S. Navy—the cruiser "Cowpers" and the destroyers "Hewitt" and "Stamp" in the Persian Gulf, and the destroyer "Keyron" [transliteration] in the Red Sea.

As for the Arctic, according to the plans of U.S. and NATO military leadership, constant patrolling there by Tomahawk cruise missile carriers could compensate to a certain degree for the reduction of strategic nuclear forces.

In the meantime, in contrast to the southern and western regions of the former Soviet Union, the Arctic remains a relatively tranquil region, free of ethnic collisions and hot spots, and in order that the potentials for transforming this region into a zone of real international cooperation, trust and peace could become a reality, it would seem to be necessary to carry out a number of measures at both the international and regional levels on one hand and through bilateral agreements on the other, primarily with the USA.

At the international level, the Conference on Security and Cooperation in Europe (CSCE) has been found to be the most effective in solving the problems of strengthening trust and security. The role played by the Western European Union, NATO and the Council for North Atlantic Cooperation, created within the former's framework, in maintaining peace in the European region was widely discussed in Helsinki in 1992 at the last meeting of the heads of the member-nations of the CSCE. In particular the possibility of using armed forces of the Western European Union and NATO to prevent local military conflicts was examined. During the work of the CSCE, suggestions were voiced in the West that besides the existing centers of military collisions (Yugoslavia,

Narodnyy Karabakh and others), there is also the danger of a threat arising on the borders of Turkey and even Norway. It would not be difficult to figure out what conflicts were implied on Norway's border. Incidents involving U.S. and Russian nuclear-powered submarines in the Barents Sea in 1992 were certainly in mind.

In this connection, and in order to exclude any probability of "collisions" between nuclear weapon carriers, Russia must once again raise the issue, this time before the CSCE, of creating a "nuclear-free zone" in Northern Europe, but with conditions of a different sort: Nuclear powers must pledge not only not to use or threaten the use of nuclear weapons against states within this zone—Finland, Norway, Sweden, Denmark and Iceland, but also not to locate or introduce nuclear weapon carriers in this zone. The USA and Russia could act as the guarantors of such a zone.

by offering to act as a guarantor together with the USA, Russia would dispel the West's doubts regarding the fact that it is the only one of the all of the former republics of the Soviet Union to which nuclear weapons belong, and that only it is in a position to ensure security and the corresponding technical conditions for maintaining nuclear warheads throughout all of the territory of the former USSR. It was in this direction that coordination on practical measures proceeded at the January 1993 meeting of the heads of state of the CIS in the city of Minsk.

In solving the military-political problems of the Arctic, we should consider that Russia and 10 other CIS states have joined the Council for North Atlantic Cooperation. It also has 16 NATO countries as members, including five Arctic countries (the USA, Canada, Norway, Denmark, Iceland). This council, which unites former cold war adversaries—NATO and former Warsaw Pact countries—will be a permanent working body under which regular consultations regarding military-political issues, military contacts, and scientific and parliamentary exchanges are foreseen.

Thus, an international mechanism that could be used to reduce the level of the continuing military confrontation in the Arctic with regard for the new disposition of political forces in the world has now been created. In its peace-making activity, which is being carried out on a basis mutually acceptable to Russia and the USA, Russia may receive support not only from CIS states but also from Arctic countries—Canada, Norway, Denmark, Finland, Sweden and Iceland.

The system of measures of trust aimed at reducing the probability of unintentional armed conflicts at sea must, in our opinion, embrace both individual regions of the Arctic basin and the entire region as a whole. In principle certain foreign experts, particularly Canadian, Norwegian, American and English specialists, also hold this opinion.

A "zone of disengagement" of naval forces could be established in the Norwegian Sea, perhaps along the

Nordcap-Spitsbergen line, which cannot be crossed by warships, including submarines of the USA, NATO and Russia, without preliminary mutual notification of the sides, as well as notification of Norway. Separating warships on either side of the "disengagement zone" could obviously reduce to some degree the military tension in this region, and most importantly, decrease the probability of a chance military incident. We think that the process itself of mutual notification regarding movements of one's ships across this "disengagement zone" would help to raise the trust of all sides, and reduce tension in Norway.

The same kind of "disengagement zone" could be established in the Chukchi Sea as well—on the boundary between the economic zones of Russia and the USA.

On agreeing with such a measure, the USA and Russia would have to allow for a certain amount of openness in relation to the activities of their navies, and limit their rights on freedom of navigation granted to all in accordance with the 1982 UN Convention on the Law of the Sea. The lawful rights of the sides to freedom of military navigation will be placed on one side of the balance, and the threat to the security of the sides will be placed on the other. We feel that security and trust are more important than claims upon freedom of military navigation. Consequently we need the good political will of the USA, NATO and Russia in achieving a compromise in the interests of peace.

Creating mutual "prohibited zones" excluding submarines armed with ballistic and cruise missiles could become another important measure of strategic trust. What this calls for is creating a zone along Russia's shores of a width that at least exceeds the range of Tomahawk cruise missiles (1,300 km today, and 3,000 km in the future). Submarines belonging to the USA and NATO would be forbidden from entering the "prohibited zone"; in turn, a similar zone which will not be entered by submarines belonging to Russia should be established all along the shores of the USA and NATO countries.

We can expect the reaction of the American side to this proposal to be negative, because it is contrary to the concept of "forward naval lines" adopted for the U.S. Navy in 1982. But in principle, Russia could also use such forward positions for combat patrols by its submarines along the more vulnerable western and eastern shores of the USA. However, this would be nothing more than a return to the times of the Cold War. On the other hand, if we abandon the practice of covert penetration of submarines into coastal waters of the other side, we would exclude incidents such as those that occurred in the Barents Sea in 1992-1993, and most importantly, we would reduce the risk of starting chance military conflicts involving forward-based resources. Considering this, an agreement on "prohibited zones" could at first be signed in relation to the high-latitude northern region—that is, to the north of the Arctic Circle.

These same purposes could also be served by an agreement to establish "zones of prohibited airspace" north of the shores of Arctic states. Flights by military aviation would have to be prohibited in them. In this case there would be an agreement on mandatory prior notification regarding flights through a prohibited zone if such flights are necessary.

The idea of creating "safe zones" for SSBNs—that is, zones free of antisubmarine warfare forces—deserves especially careful substantiation. The proposal is to create zones in which only Russian SSBNs would be permitted to patrol and base themselves. Similar zones would be designated for American SSBNs in waters off of the U.S. coast. The Barents and Okhotsk seas could be considered for the Russian side, and the Gulf of Alaska could be considered for the American side as such "safe zones." These "safe zones" will be more advantageous to Russia, which could have SSBNs patrolling its northern coast, and disadvantageous to the USA, which disperses its SSBNs over the open ocean. But at the same time creation of such zones only for Russian SSBNs would make it easier for the probable adversary to conduct antisubmarine warfare, because he could concentrate his efforts in a certain region.

Considering the forthcoming significant reduction in the number of SSBNs, the strategic significance of the central Arctic basin for use of nuclear-powered submarines could decrease in the future. And considering the agreements suggested above on disengagement, prohibited and safe zones, it would be fully logical to raise the issue of creating a "demilitarized zone" in the central Arctic. Use of antisubmarine weapons of any kind, and of submarines and self-contained military undersea resources, should be prohibited within this zone (in the air and sea space, on ice, beneath the ice, beneath the water, including the sea-bed). In addition, the sides signing an agreement on a "demilitarized zone" would have to refrain from conducting exercises in this zone using other naval forces, as well as air and amphibious forces.

Measures associated with maintaining the openness of military activities of the Northern Fleet (providing notification on exercises and other activities, and exchanging permanent liaison officers at coastal and ship command

posts, bases, airfields and storage depots) could also help to raise the level of trust. A proposal is currently being examined on conducting joint naval exercises in the northern region with the participation of Russia and NATO.

Of all of the regions of the Arctic Ocean indicated above as candidates for zones of trust, the Barents Sea, which is included in the plans of the American military leadership as a "forward naval line," may turn out to be the most "painful" region.

In this connection we believe that in the first stage of the proposed system of measures of trust, we should implement the agreement of the USSR, the USA and Canada on averting dangerous military activity in the Barents Sea. In particular, the Barents Sea should be declared to be a "region of special attention." As is determined in agreements, the sides must take effective steps in this region to curtail, and settle by peaceful means, without resorting to the threat of force, any incidents that may arise as a result of dangerous military activity, and in particular, they must exclude the most complex and dangerous kind—close shadowing of strategic naval objectives.

Conversion of bases, airfields and test ranges within the military infrastructure will be unavoidable in connection with further reduction of strategic offensive arms, as well as the forces and resources supporting their activity. Work associated with reequipping some bases of the Russian Northern Fleet and the U.S. Atlantic Fleet—freight harbor complexes for example—could be carried out with the participation of Russian and American specialists, and possibly by joint firms, as a means of exchanging experience.

On the whole, it seems that the measures proposed above for raising the level of trust between Russian naval forces and those of the USA and other NATO countries on the basis of treaties will impart greater predictability to naval activity in the Arctic region, help to stave off threatening and dangerous actions in northern seas, prevent incidents at sea, develop contacts between fleets, and ultimately end the Arctic's role as a theater of military rivalry.

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'Gorchak' Fixed Fortifications Weapons Module

94UM0103A Moscow KRSNAYA ZVEZDA in Russian
3 Dec 93 p 2

[Article by Aleksandr Yegorov, KRSNAYA ZVEZDA, under rubric "Arsenal": "'Gorchak' Is Practically Invulnerable")]

[Text] Fixed emplacements in whose preparation concrete and metal, and in the extreme case wood and earth, were used to provide solid defense at all times. It was not just today that the idea arose of creating protective emplacements for a gunner under plant conditions with subsequent delivery to a combat operations area. This [idea] is also attracting our designers.

We will familiarize the readers with the very successful development of the Central Scientific Research Institute of Precision Machine-building known by the codename "Gorchak." This installation is intended for fortification of areas and troop positions in the border zone and for creating a system for defense of any sites requiring it. The installation is supplied with a mechanical control linkage for organic weapons.

What is "Gorchak"? It is a weapon complex installed in a standard concrete module and is practically invulnerable in the "underground" position. It is capable of withstanding even the hit of an artillery round. A heavy armored cover reliably protects gunner and weapon. The sheltered fighting man is equipped for constant battlefield surveillance and prompt target acquisition and classification. Having determined firing data while still underground, he "rises above the surface" at a favorable moment, already prepared to fire the necessary weapon: ATGM against tank, machinegun or grenade launcher against personnel. After hitting the target in a matter of seconds, he can disappear "underground" again.

"Gorchak" is not an innovation in the Russian Army arsenal. Such installations have been created previously, but the effectiveness of combat employment of the old systems is at a minimum two times below that of the new one. "Gorchak" is transportable and easily carried by ZIL-130 motor vehicles and by rail transport.

Basic Specifications and Performance Characteristics of "Gorchak" Installation

Weight, kg	1,000
Armament:	
AG-17 grenade launcher	1
PKM or NSV-12.7 machinegun	1
ATGM launcher	1
Unit of fire (in installation) for:	
AG-17 grenade launcher	290
PKM machinegun	1,000
NSV-12.7 machinegun	50
ATGM	4
Time for organizing a line of defense, hrs	4

AIR, AIR DEFENSE FORCES**Comparison of Specifications of Different Su-27 Models**

94UM0109A Moscow VESTNIK
PROTIVOVOZDUSHNOY OBORONY in Russian
No 8, 1993 pp 43-47

[Article by Mikhail Levin, under the rubric: "From the Family of Jet Aircraft: 'The Su-27—The Best in the World'"]

[Text] The OKB [Experimental Design Bureau] imeni P.O. Sukhoy demonstrated the Su-27K and SU-27UB aircraft, variants of the well-known Su-27 single-seat twin-engine fighter-interceptor, at the Russian Aerospace Exhibition. The basic Su-27 aircraft and one of its latest modifications—the Su-27IB—were demonstrated in flight.

The Su-27's modern aerodynamic configuration, powerful and efficient turbojet bypass engines, large fuel reserve, wide range of altitudes and flight speeds, highly effective avionics suite, and guided missile weaponry provide the fighter with high effectiveness during the interception of airborne targets. From the very beginning, the Su-27 was developed as the first domestically-produced, statically unstable fighter with a fly-by-wire control system for stability of the aircraft in the pitch, bank and yaw channels.

The fly-by-wire control system is "spread" throughout the aircraft by its channels and is extremely survivable. The fly-by-wire control system with automatic restriction of the permissible angle of attack and maximum G-load while flying, adaptive mechanization of the wing, a weapons control system using an optical-electronic radar and helmet-mounted target designation system and powerful weaponry permit the Su-27 to confidently conduct close, maneuvering aerial combat.

The Su-27's engines are noteworthy. The AL-31F TRDDF [turbojet bypass engine with afterburner], the first bypass engine in the country, was developed at the OKB imeni A.M. Lyulka. Based upon the parameters in its class, it is comparable to the highest world achievements. It is operated in a broad range of altitudes and speeds and smoothly operates in regimes of a deep air intake surge at Mach 2 under conditions of a flat, normal or inverted spin. The surge elimination systems, automatic engine start in flight, and auto continuous ignition of the primary chamber and afterburner ensure the reliability of the power plant while employing onboard weaponry.

An effective electronic warfare system is utilized on the aircraft. It consists of the "Sorbitsiya-S" active jammer (its foreign equivalent is the AN/ALQ-135). Armament consists of a built-in GSh-30-1 cannon (30 mm, 1,500

rounds per minute, 150 rounds) and up to 10 air-to-air guided missiles, including the R-27 medium-range guided missile and the R-73 close-range guided missile.

In 1986-1988, 27 time-to-climb and horizontal flight altitude world records were set in the record variant of the Su-27 interceptor that has the designation P-42 (with R-32 turbojet bypass engines with afterburner and 13,600 kgs [kilograms-force] of thrust per engine).

The year 1969 marks the beginning of the development of the aircraft and the first flight of the T-10-1 prototype aircraft occurred on 20 May 1977. The Su-27 has been in the Russian Air Force and PVO [Air Defense] inventory since 1984.

In 1991, as a result of budget restrictions, the Air Force decided to concentrate resources on combat aircraft, to prevent the development of various types of aircraft with identical missions, ceased purchases of MiG-29 aircraft, and began to develop a base Su-27. They also decided to develop both a reconnaissance aircraft, a fighter-bomber, a jammer, an all-weather interceptor, etc. based upon it. One cannot call this step brilliant, but rather, sadly compelled because the MiG-29 has its own prospects that we should not lose.

According to a \$1.5 billion contract, 24 Su-27 aircraft and equipment for them were sold to China at a price of \$35 million per aircraft. (This was the first delivery of Russian weaponry to China in the last 30 years). The transfer began in August 1992. It was envisioned that Russian military instructor-pilots would provide retraining for 200 Chinese pilots. However, the Chinese refused these services. They explained that they have their own instructors who underwent flight training in the Su-27 at one of our country's aviation schools.

The Su-27 has been series produced at Komsomolsk-na-Amur since 1982 and the Su-27UB at Irkutsk since 1986.

A coherent pulse-Doppler jam-proof radar, that has the capability to search and track targets in the background of the ground, has been installed on the Su-27. (It provides track-while-scan and the simultaneous launch of guided missiles against two targets). A 36Sh optical radar system supplements the radar. The 36Sh was developed at "Geofizika" NPO [Scientific Production Association] and works in tandem with the helmet-mounted target designation system. The system is designed to determine the coordinates of contrasting thermal mobile targets and has the following technical specifications:

Specifications of the 36Sh Optical Radar System	
Search field	120 X 75 degrees
Field of view	60 X 10 degrees
	20 X 5 degrees
	3 X 3 degrees

Detection range:	
In the rear hemisphere	50 km
In the forward hemisphere	15 km
Range measurement range	0.3-3 km
Coordinate measurement accuracy:	
for azimuth	5 angular minutes
for range	10 meters
Angular velocity of automatic tracking	more than 25 degrees/sec

The Su-27UB is a two-seat combat trainer fighter aircraft that is designed to retrain pilots into the Su-27 aircraft. It retains all of the SU-27's combat capabilities (the weapons and weapons control systems) and provides an outstanding field of view from both cockpits.

The seats are located in tandem in the two-seat crew cockpit.

Series production has begun of an Su-27UB modification that is equipped with an aerial refueling system. In 1988, this modification completed a flight from Moscow—Komsomolsk-na-Amur—Moscow, a distance of 13,440 km, with four aerial refuelings and without landing.

The Su-27IB is a two-seat fighter-bomber with the seats located side by side. It is designed to destroy heavily-defended point targets in any weather conditions, during the day or at night. It is capable of completing a flight in the terrain following mode and is designed to replace the first variants of the Su-24 aircraft. State tests are slated for completion in 1993. The Su-27IB has an integral aerodynamic configuration and is manufactured according to a "triplane" with PGO [foreplanes] design. It is also distinguished by the utilization of a twin-wheel nose gear and reinforced main landing gear. It does not have ventral fins. The cockpit is an armored capsule with the employment of a titanium alloy and armored glass. Entry into the cockpit is through a folding ladder in the forward landing gear well. The cockpit is equipped with multi-function cathode ray tube displays. The seats have improved ergonomics.

To suppress enemy air defenses, the aircraft can be armed with two Kh-31 anti-radiation missiles on suspension points under the engine air intakes, with 500 kg laser-guided bombs on internal underwing pylons, with Kh-29T television-guided and Kh-29L laser-guided air-to-surface guided missiles on the middle underwing pylons, with RVV-AE medium range air-to-air missiles on the external underwing pylons and with R-73 infrared seeker dog fight missiles on the wing tips. KAB-150 and UAB-500 bombs can be installed. (The bombs have laser, television, or infrared guidance).

Guidance of a Kh-29 guided missile can be carried out using the helmet-mounted system. The 30 mm cannon has been retained in the starboard wing root extension and a retractable aerial refueling probe has been located in the port wing root extension. The aircraft's nose

fairing has a flattened shape with developed side extensions and tapered edges. The prototype aircraft demonstrated at "Mosaeroshow-92" did not have sensors in the metal nose fairing. It is proposed to install a radar with a small antenna in it.

The Su-27K is a carrier-based fighter aircraft. It is designed for defense of Navy ships from enemy offensive air weaponry.

Work on the development of the Su-27 aircraft began in 1977. The first flight took place in August 1987. In November 1990, the Su-27K carried out a landing in aircraft fashion on the deck of the Admiral of the Fleet of the Soviet Union Kuznetsov (Tbilisi) heavy aircraft-carrying cruiser for the first time in the USSR, and took off from the ship's deck using a ski jump. It was proposed to demonstrate the Su-27K for the first time at the 1992 Berlin Aerospace Exhibition. Completion of state testing was noted in July 1992 and a decision was made on series production. An export sales contract has been concluded.

Like the Su-27IB, the Su-27K is manufactured based upon a "triplane" with foreplanes design that significantly expands the aircraft's maneuvering capabilities. The fighter is equipped with a folding wing and stabilizer. Automatically deflected wing leading edge mechanization permits it to carry out flights through a drag polars envelope. The developed mechanization of the trailing edge increases lift by a factor of 1.5 during landing and substantially reduces landing speed. The cockpit seat has an increased angle of incline. The flight-navigation system provides an auto-pilot flight mode until touchdown on the ship's deck.

The retractable aerial refueling probe is located ahead of the cockpit on the port side. The optical-electronic radar is located on the right if you are looking out from the cockpit (on the initial Su-27, it has a central location).

The aircraft is equipped with a multichannel communications system and a developed electronic countermeasures system.

Besides the built-in 30 mm cannon, the Su-27K's weaponry includes the "Moskvit" supersonic long-range anti-ship guided missile (located on a ventral suspension point on a special launch rail) and up to 10 air-to-air missiles.

The Flight Research Institute demonstrated a flying laboratory on the ramp that was developed based on the Su-27 aircraft to study active flight safety support systems of future maneuvering aircraft and optimal control of their trajectory movement. The flying laboratory is being utilized as part of the LMK-2405 flight-modeling system. It also includes a ground test-adjustment stand.

The flying laboratory is equipped with a integrated control system that combines an experimental aircraft and engine control system and an experimental information and control element depiction system. An omnidirectional information exchange system is utilized for communications with the ground.

The flight test control system supports processing of external trajectory measurements, radio-telemetry information, and also modeling and formation of the laws of control utilizing a ground stand.

The "Russkiye vityazi" [Russian Warriors] acrobatic team—six Su-27 aircraft—is successfully performing in our country and abroad. Test-Pilot A. Kvochur flew at "Mosaeroshow-92". He recently organized a new acrobatic team. It consists of four Su-27 aircraft (two single-seat and two twin-seat aircraft with an aerial refueling system). The aircraft have been painted using Western-manufactured paint. The aircraft were purchased at the plant (single-seat aircraft—at Komsomolsk-na-Amur) at a price of R50 million per aircraft. The private insurance company "Yupiter" provided the funds for the acquisition of the aircraft. One of the goals of the new acrobatic team is to advertise the LII [Flight Research Institute] to expand the business activity of its specialists abroad.

Comparative Specifications of Su-27 Aircraft Variants

Type of Aircraft	Su-27	Su-27IB	Su-27K	Su-27UB
Parameters				
Designation	Interceptor	Fighter-bomber	Carrier-based Fighter	Combat Trainer
Year of first flight	1977	1990	1987	1985
Year accepted into the inventory	1984			
Dimensions:				
Wing span, m	14.7	not available	14.7	14.7
Aircraft length, m	21.935	not available	21.935	21.935
Aircraft height, m	5.932	not available	5.932	6.357
Wing area, m ²	62	not available	62	62
Wing sweep, p/k [leading edge], degrees	42	not available	42	42
Crew	1	not available	1	2

Comparative Specifications of Su-27 Aircraft Variants (Continued)

Type of Aircraft	Su-27	Su-27IB	Su-27K	Su-27UB
Engines				
Number and Model	2 X AI-31F	2 X AI-33K	2 X AI-31F	2 X AI-31F
Thrust, kgs (kilograms-force)				
With afterburner	2 X 12,500	2 X 12,800	2 X 12,500	2 X 12,500
Without afterburner	2 X 7,600		2 X 7,600	2 X 7,600
Weights and Payloads, kg				
Take-off Weight				
Maximum	30,000	44,360	32,000	30,500
Normal	22,500	not available	not available	24,000
Of empty aircraft	16,000	not available	not available	17,500
Maximum combat payload	6,000	8,000	6,500	not available
Internal fuel	9,400	not available	not available	not available
Flight data				
Maximum flight speed, kph				
At high altitude	2,500	not available	2,300	2,125
At sea level	1,400	not available	not available	not available
Maximum Mach Number	2.35	not available	2.17	2.0
Service ceiling, m	18,500	not available	17,000	17,250
Maximum range, km	3,900	4,000	3,000	3,000
Take-off run, m	650	not available	not available	750-800
Landing speed, kph	not available	not available	240	not available
Landing run, m	620	not available	not available	650-700
Maximum operational G-load	9	not available	8	9

NAVAL FORCES

Crew List From Submarine K-129

94UM0107A Moscow KRASNAYA ZVEZDA in Russian
13 Nov 93 p 5; 4 Dec 93 5

[Article by Commission Chairman Dmitriy Volkogonov under rubric "Search": Carried Off by Time"]

[Text] To our readers!

The efforts of "Search" were concentrated for long years on establishing front destinies and perpetuating the memory of people who perished or were missing in action during the Great Patriotic War. More and more often, however, life forces us to broaden the chronological framework of the rubric: Our combat formation is missing those who performed alert duty in ocean expanses, who participated in local wars and armed conflicts abroad, who were performing a peacemaking mission... These people in shoulderboards are worthy of having people know about them and remember them. Henceforth "Search" will follow this noble goal.

The Commission for Investigating Facts of Disappearance of Russian Citizens Without a Trace Outside the

Territory of the Former USSR, and Also Foreign Citizens Who Disappeared Under Unexplained Circumstances on the Territory of Russia was established by a special decision of Russian President B. N. Yeltsin. For the first time in the history of post-revolutionary Russia, the government firmly and definitely declared that the state is responsible for its citizens, including those performing official duties abroad, that it never will abandon them when they are in trouble, and that it will take all possible steps to search for them in case they disappear.

It is concern for its citizens that distinguishes a democratic country from totalitarian regimes, for which the life of an individual is nothing more than a statistical unit. Along with concern for its own citizens, a democratic state also cannot abandon citizens of other countries who are in trouble and who find themselves on its territory. The Commission newly established under the Russian President will serve specifically these two humanitarian goals, which are noble to the highest degree.

The Commission is established on the basis of the Russian side of the joint Russian-American Commission for Searching for Americans Missing on Territory of the Former USSR During and After World War II, which already has been in existence for over one and one-half years. This [joint] Commission has given a rather good

account of itself. In particular, it succeeded in clarifying the fate of more than 22,000 Americans freed from fascist captivity and investigating ten instances of destruction of U.S. reconnaissance aircraft over USSR territory and near its shores. In the majority of them the fate of crew members of these aircraft also was clarified. Much also was done to investigate information submitted by the U.S. side about alleged cases of U.S. POW's of the Korean and Vietnam war periods being sent onto USSR territory.

We established that captured serviceable U.S. aircraft really were delivered to USSR territory, and this was natural—both a hot and a "cold" war was going on. At the same time, documents the [joint] Commission has at its disposal do not permit considering information about POW pilots being sent onto USSR territory reliable, but they also are insufficient to reject the information unconditionally. The work goes on, and we would be grateful to readers for any information on these matters.

In the course of the [joint] Commission's work, citizens of other nationalities, chiefly tens on hundreds of Russians who disappeared in the abyss of time, ended up in its field of view incidentally along with documents on U.S. citizens. The situation was reported to the President of Russia, and he made the decision that the new Russia must take a new attitude toward the fate of its citizens; no one should be forgotten—not in slogans, but in fact.

The [new] Commission is beginning work. We have no establishment; this is volunteer work. All ministries and departments having to do with the problem—Ministry of Foreign Affairs, Ministry of Defense, Ministry of Security, Ministry of Internal Affairs, SVR [Foreign Intelligence Service] and others—will be active in the Commission but, most important, there will be enthusiasts, scientific associates, post-graduate students, military people, archivists—people for whom another's fate is not

simply a line in a document and who are ready to work gratis for the sake of high ideals of humanism and justice.

Around two weeks have gone by since the edict was published, but the first results already are in. During this time dozens of people phoned us, many to offer absolutely unselfish assistance and services, but basically these were calls from people who have not had information about those near and dear to them for tens of years. All information was entered in a card file and we began work. We will inform the public on its progress. To begin with we are suggesting that KRASNAYA ZVEZDA publish the crew list of the submarine K-129, which was lost in the Pacific in 1968 at the point with coordinates 46°06' North, 179°57' West. Carrying out a unique operation in 1974, the Americans raised her forebody and buried the remains of six crew members found in it according to naval ritual. The other 92 crew members remained in the submarine, and today we can only bow our heads in their memory—according to available information, they courageously performed their duty to the Motherland to the end. The Pacific's murky abysses became their final resting place.

We are passing on the alarm bell from this submarine to the Central Naval Museum at the request of the U.S. side, which raised part of the submarine. Let its sad sound be a hymn to the memory of our countrymen, who served the homeland faithfully and who found their last refuge in mute ocean depths. Russia always will remember her sons.

The Commission appeals to everyone who has information about our countrymen who vanished abroad after World War II and also about foreign citizens who disappeared on territory of the former USSR, with a request to write to the following address:

Moscow, 103132, Ilinka, 10; or telephone (095) 206 59 48, 206 38 09; fax 206 35 79.

[Submarine K-129 Crew List]

No	Position	Military Rank, Last Name, First Name, Patronymic	Year of Birth/Year Joined Navy	Nationality	Place of Call-up, Makeup and Address of Family or Parents (as of Moment of Submarine's Loss)
1	Commander	Captain 1st Rank Vladimir Ivanovich KOBZAR	1930/48	Ukrainian	Wife Irada Ivanovna KOBZAR, born 1930, daughter Tatyana, born 1954, son Andrey, born 1960. Live in settlement Rybachiy-I, Kamchatka Oblast, ul. Vilkova, 31, kv. 20.
2	Executive Officer	Captain 2nd Rank Aleksandr Mikhailovich ZHURAVIN	1933/51	Jewish	Wife Irina Georgiyevna ZHURAVINA, born 1934, son Mikhail, born 1956. Live in Vladivostok.
3	Deputy commander for political affairs	Captain 3rd Rank Fedor Yermolayevich LOBAS	1930/52	Ukrainian	Wife Anna Potapovna LOBAS, born 1938, daughter Larisa, born 1957. Live in Vladivostok, ul. Leninskaya, 127, kv. 25.
4	Senior watch officer	Captain 3rd Rank Vladimir Artemyevich MOTOVILOV	1936/54	Russian	Wife Elvira Andreyevna MOTOVILOVA, born 1938, son Oleg, born 1965. Live in settlement Rybachiy-I, Kamchatka Oblast, ul. Gusarova, 45, kv. 43.

[Submarine K-129 Crew List] (Continued)

No	Position	Military Rank, Last Name, First Name, Patronymic	Year of Birth/Year Joined Navy	Nationality	Place of Call-up, Makeup and Address of Family or Parents (as of Moment of Submarine's Loss)
5	Navigation department head	Captain-Lieutenant Nikolay Ivanovich PIKULIK	1937/57	Ukrainian	Wife Tamara Konstantinovna PIKULIK, born 1943, daughter Natasha, born 1963. Live in settlement Rybachiy-I, Kamchatka Oblast, ul. Vilkova, 29, kv. 6.
6	Head of navigation department ENG [electronavigation group]	Lieutenant Anatoly Petrovich DYKIN	1940/59	Russian	Wife Valentina Petrovna DYKINA, born 1941, daughter Irina, born 1966.
7	Missile-gunnery department head	Captain 3rd Rank Gennadiy Semenovich PANARIN	1935/53	Russian	Wife Zoya Semenovna PANARINA, born 1942, daughter Yevgeniya, born 1965. Live in settlement Rybachiy-I, Kamchatka Oblast, ul. Vilkova, 47, kv. 13.
8	Missile-gunnery department control group officer	Captain-Lieutenant Viktor Mikhaylovich ZUYEV	1941/58	Russian	Wife Galina Nikolayevna ZUYEVA, born 1945, live in settlement Rybachiy-I, Kamchatka Oblast, ul. Nakhimova, 20, kv. 48.
9	Torpedo department head	Captain 3rd Rank Yevgeniy Grigoryevich KOVALEV	1932/52	Belorussian	Wife Olga Nikolayevna KOVALEVA, born 1932, daughter Olga, born 1961. Live in Vladivostok.
10	Engineering department head	Captain 3rd Rank Nikolay Nikolayevich OREKHOV	1934/53	Russian	Wife Tamara Ivanovna OREKHOVA, born 1935, son Igor, born 1959. Live in settlement Rybachiy-I, Kamchatka Oblast, ul. Nakhimova, 7, kv. 20.
11	Engineering department motor group officer	Engineer Captain-Lieutenant Aleksandr Yegorovich YEGOROV	1934/53	Russian	Divorced. Has daughter Olga, born 1961. Father Georgiy Kasyanovich YEGOROV, born 1900, mother Olga Dmitriyevna, born 1902. Live in Kursk, ul. Sorokovaya, d. 140.
12	Chief of electronics service	Senior Lieutenant Aleksandr Fedorovich ZHARNAKOV	1939/57	Russian	Wife Tamara Dmitriyevna ZHARNAKOVA, born 1939, daughter Yelena, born 1962. Live in settlement Rybachiy-I, Kamchatka Oblast, ul. Gusarova, 45, kv. 46.
13	Chief of medical service	Major of Medical Service Sergey Pavlovich CHEREPANOV	1932/52	Russian	Divorced. Has son Arkady, born 1957. Family lives at address: Vladivostok, ul. Kalininskaya, 29, kv. 23.
14	Group officer. Went in place of Senior Lieutenant V. G. FADEYEV, who is listed on roster	Senior Lieutenant Vladimir Alekseyevich MOSYACHKIN	1940/60	Russian	Wife Nataliya Grigoryevna MOSYACHKINA, born 1944, daughter Yelena, born 1965. Live in settlement Rybachiy-I, Kamchatka Oblast, ul. Gusarova, 47, kv. 62.
15	Helmsmen/signalmen team leader	Extended Service Warrant Officer Vyacheslav Semenovich BORODULIN	1939/58	Russian	Wife Nina Alekseyevna BORODULINA. Lives in Vladivostok, ul. Okatovaya, 39, kv. 2.
16	Helmsmen/signalmen squad leader	Petty Officer 2nd Class Petr Tikhonovich LOPSAR	1945/64	Russian	Minusinskiy Rayon Military Commissariat, Krasnoyarsk Kray. Father Tikhon Lukich LOPSAR, mother Yefrosinya Isayevna. Live in Bryansk Oblast, Klintsovskiy Rayon, town Boldovka.
17	Helmsman/signalman	Seaman Leonid Vasilyevich TOKAREVSKIKH	1948/67	Russian	Shipunovskiy Rayon Military Commissariat, Altay Kray. Mother Nataliya Filippovna TOKAREVSKIKH, brother, sister. Live in Zuyevka, Kirov Oblast.
18	Helmsman/signalman	Seaman Sergey Nikolayevich TRIFONOV	1948/67	Russian	Nikolayevskiy Rayon Military Commissariat, Khabarovsk Kray. Father Nikolay Yegorovich TRIFONOV, mother Pelageya Ivanovna TRIFONOVA. Live in Nikolayevsk-on-Amur, village Ozernak.
19	Helmsman/signalman	Seaman Yuriy Fedorovich KARABAZHAKOV	1947/66	Russian	Sovetskiy Rayon Military Commissariat, Chelyabinsk Oblast. No relatives. Children's home, Troitsk.

[Submarine K-129 Crew List] (Continued)

No	Position	Military Rank, Last Name, First Name, Patronymic	Year of Birth/Year Joined Navy	Nationality	Place of Call-up, Makeup and Address of Family or Parents (as of Moment of Submarine's Loss)
20	Helmsman/signalman	Seaman Vitaliy Pavlovich OVCHINNIKOV	1944/65	Russian	Mikhaylovskiy Rayon Military Commissariat, Amur Oblast. Father Pavel Andreyevich OVCHINNIKOV, mother Pelageya Pavlovna. Live in Kirov Oblast, Ialskiy Rayon, Luza, ul. Vinogradova, 10.
21	Electrician/navigation team leader	Petty Officer 2nd Class Mansur Gabdulkhanovich KHAMETOV	1945/64	Tatar	Sverdlovsk Rayon Military Commissariat, Perm Oblast. Father Giabdulkhan KHAMETOV, mother Minari KHAMETOVA, two sisters, brother. Live in Perm, ul. Lyulinskaya, 4, kv. 1.
22	Electrician/navigation squad leader	Senior Seaman Mikhail Ivanovich KRIVYKH	1947/66	Russian	Usolye-Sibirskiy Rayon Military Commissariat, Irkutsk Oblast. Father Ivan Yevstafeyevich KRIVYKH. Live in Irkutsk Oblast, Chermkhovskiy Rayon, village Tunguska.
23	Electrician/navigation	Seaman Gennadiy Semenovitch KASYANOV	1947/66	Russian	Kanskii Rayon Military Commissariat, Krasnoyarsk Kray. Father Semen Vasilyevich KASYANOV, mother Nadezhda Andreyevna Prokopyeva, two sisters. Live in Krasnoyarsk Kray, village Brazhnoye.
24	Control squad leader	Petty Officer 2nd Class Nikolay Ivanovich GUSHCHIN	1945/64	Russian	Tagilostrovskiy Rayon Military Commissariat, Sverdlovsk Oblast. Stepfather Fedor Borisovich MARTYNYUK, mother Anna Vladimirovna GUSHCHINA. Live in Nizhniy Tagil, Kutuzova, 1b, kv. 13.
25	Senior electrician/operator	Senior Seaman Viktor Ivanovich BALASHOV	1946/65	Russian	Kimovskiy Rayon Military Commissariat, Tula Oblast. Father Ivan Ivanovich BALASHOV, mother Natalya Vasilyevna BALASHOVA, two sisters, brother. Live in Kimovskiy Rayon, Tula Oblast, town Veselyy lug.
26	Senior electrician/operator	Seaman Anatoliy Sergeyevich SHUVALOV	1947/66	Russian	Rudnevskiy Rayon Military Commissariat, Kustanay Oblast. Father Sergey Grigoryevich SHUVALOV, mother Yekaterina Yakovlevna SHUVALOVA, two brothers. Live in Rudnyy, Kustanay Oblast.
27	Control team leader	Petty Officer 2nd Class Aleksey Georgiyevich KIZYAYEV	1944/64	Russian	Leninskii Rayon Military Commissariat, Tomsk Oblast. Father Georgiy Il'ich KIZYAYEV, mother Antonina Sergeyevna KIZYAYEVA, two brothers, two sisters. Live in Donetsk, ul. Kotsyubinskogo, 2.
28	Gyroscope operators squad leader	Petty Officer 1st Class Vladimir Vladimirovich LISITSIN	1945/64	Russian	Oktyabrskiy Rayon Military Commissariat, Izhevsk. Father Vladimir Leontevich LISITSIN, mother Antonina Yakovlevna, sister. Live in Chelyabinsk-40, ul. Pushkina, 11, kv. 5.
29	Senior gyroscope operator	Seaman Viktor Vasilyevich KOROTETSKIKH	1947/66	Russian	Kustanavskiy Rayon Military Commissariat, Kustanay Oblast. Mother Anna Nikolayevna KOROTETSKIKH, brother. Live in Kustanay, ul. Proletarskaya, 48, kv. 4.
30	Engineers squad leader	Petty Officer 2nd Class Nikolay Yemelyanovich SAYENKO	1945/64	Russian	Oktyabrskiy Rayon Military Commissariat, Novosibirsk, father Yemelyan Petrovich SAYENKO, mother Yevdokiya Grigoryevna SAYENKO, brother, sister. Live in village Moshkovo, Moshkovskiy Rayon.
31	Senior engineer	Seaman Yuriy Ivanovich DUBOV	1947/66	Russian	Kytmanovskiy Rayon Military Commissariat, Altay Kray, father Ivan Ivanovich DUBOV, mother Yelena Trofimovna DUBOVA, four sisters. Live in Altay Kray, Kytmanovskiy Rayon, village Sungay.

[Submarine K-129 Crew List] (Continued)

No	Position	Military Rank, Last Name, First Name, Patronymic	Year of Birth/Year Joined Navy	Nationality	Place of Call-up, Makeup and Address of Family or Parents (as of Moment of Submarine's Loss)
32	Senior engineer	Petty Officer 2nd Class Valeriy Mikhaylovich SURNIN	1945/64	Russian	Sovetskiy Rayon Military Commissariat, Kirov Oblast. Father Mikhail Petrovich SURNIN, mother Zoya Ivanovna SURNINA, two sisters, brother. Live in Kirov Oblast, Sovetskiy Rayon, town Zhuravki.
33	Torpedomen squad leader	Petty Officer 2nd Class Valeriy Georgiyevich CHUMILIN	1946/65	Russian	Shilkinskiy Rayon Military Commissariat, Chita Oblast. Father Georgiy Yevgenyevich CHUMILIN, mother Vera Aleksandrovna CHUMILINA. Live in Shilka, ul. Okhotnichya, 27.
34	Senior torpedoman	Seaman Valeriy Grigoryevich NOSACHEV	1947/66	Russian	Tselinogradskiy Rayon Military Commissariat, Tselinograd Oblast. Father Grigoriy Ivanovich NOSACHEV, mother Olga Kharitonovna NOSACHEVA, brother, sister. Live in Tselinograd Oblast, Tselinogradskiy Rayon, village Zhuravlevka.
35	Torpedoman	Seaman Vladimir Mikhaylovich KOSTYUSHKO	1947/66	Russian	Ust-Kutskiy Rayon Military Commissariat, Irkutsk Oblast. Father Mikhail Alekseyevich KOSTYUSHKO, mother Fedosya Alekseyevna, sister, brother. Live in Ust-kut, Vokzalnaya, 83.
36	Torpedo electricians squad leader	Petty Officer 2nd Class Viktor Andreyevich MARAKULIN	1945/64	Russian	Shelekhovskiy Rayon Military Commissariat, Irkutsk Oblast. Father Andrey Trofimovich MARAKULIN, mother, two sisters. Live in Angarsk, ul. Naberezhnaya, 14.
37	Radiotelegraphers team leader	Extended Service Warrant Officer Vitaliy Ivanovich TERESHKIN	1941/62	Russian	Tomskiy Rayon Military Commissariat, Tomsk Oblast. Mother Anna Ivanovna YEMELYANOVA. Lives in Altay Kray, Talmenovskiy Rayon, village Inyushevo.
38	Radiotelegraphers squad leader	Petty Officer 2nd Class Valeriy Stepanovich NECHEPURENKO	1945/64	Russian	Zheleznodorozhnyy Rayon Military Commissariat, Altay Kray. Father Stepan Karlovich NECHEPURENKO, mother Yekaterina Sergeyevna, brother. Live in Altay Kray, Troitskiy Rayon, village Ozeropetrovskiy.
39	Radiotelegrapher	Seaman Anatoliy Andreyevich ARKHIPOV	1947/66	Chuvash	Sverdlovskiy Rayon Military Commissariat, Perm. Father Andrey Ivanovich ARKHIPOV. Presently lives at address: Chelyabinsk, ul. Turistov, 27, kv. 38.
40	Machinists team leader	Petty Officer 1st Class Aleksandr Vasilyevich KUZNETSOV	1945/64	Russian	Aleksandrovskiy Rayon Military Commissariat, Pervomaysk Oblast. Father Vasily Yakovlevich KUZNETSOV, mother Mariya Yegorovna. Live in Sverdlovsk Oblast, Kalshhevskiy Rayon, Kalinskii Rural Soviet, settlement Mali.

See next issue of "Homeland History" for conclusion of list

'Bereg' Shore-Based 130-mm SP Artillery System
94UM0090.1 Moscow KRASNAYA ZVEZDA in Russian
19 Nov 93 p 2

[Article by Vladimir Maryukha: "Ground Dreadnought for Naval Battles"]

[Text] The shore artillery system in question has still not been adopted into the armament of the coastal troops of the Navy. It would still be a classified model for some time were it not for the arms exhibition in Abu Dhabi.

But then, even now buyers prefer to speak of it in hints, although for specialists, including foreign ones, the characteristics of the complex developed by the "Barrikada" production association and dubbed "Bereg" are no secret.

It was developed to protect coastal flanks, replacing the outmoded models of medium-caliber guns. The system can also fire on coastal targets. Essentially it is a ship-board gun turret, transported from the swaying deck to a multi-axle automotive platform. Also included, on another similar chassis, is the target detection, aiming and target designation station, which is capable of tracking 4 naval targets in the automatic mode and

adjusting fire simultaneously against two of them. Such a design of an artillery system, on the ship principle, has a number of vital advantages in comparison with the systems which are in the armament of the Ground Troops. The system also includes a rear services support vehicle, which completes the similarity to a ship, with its navigational equipment, compartments for relaxation of the crew of the "ground dreadnought," and even its own mess/wardroom. Thanks to this specialized rear support, the system is completely independent for seven days in terms of water, food and fuel requirements.

In principle, the self-propelled shore gun can also deliver fire independently, without other system components. For this the gun "turret on wheels" is equipped with a ballistic computer, a command opto-electronic sight, and a laser rangefinder. At the same time, the system can also deliver fire from other target designation sources, and the gun is aimed in the automatic mode with an electromechanical system.

The basic load of the artillery mount consists of fragmentation and high-explosive shells. The minimal basic load is 40 rounds.

The total crew strength of this ground artillery vessel is 19. The gun crew proper consists of 8 men, while 7 run the central command post and 4 support the deployment of the "rear services."

The reason why the complex has still not been adopted into the armament, after successful state tests, has to do with the interruption of former economic ties. But it is not Belarus, which supplies the chassis for the system, or Ukraine, which "privatized" the experimental model and produced the control apparatus of the system, which prevent this. A Russian enterprise, the joint-stock company "Shemerlinsk Specialized Motor Vehicle Plant," refuses to build the truck bed for the "Bereg." But this system is now awaited not only by buyers of the fatherland, but also by the military of other countries.

Tactical Performance Characteristics of the "Bereg" Self-Propelled Shore Artillery System

1. Caliber 130-mm
2. Effective range of fire around 20 km
3. Range of target location around 35 km
4. Time required to set up system from 5 to 30 minutes
5. Rate of fire 10 rounds per minute
6. Aiming angle - horizontal +120 degrees
vertical from -5 to 50 degrees
7. Speed up to 60 km/h

Selivanov: 'Problems, Directions of Navy Development'

94UM0110A Moscow MORSKOY SBORNIK in
Russian No 8, Aug 93 (Signed to press 9 Aug 93) pp 3-6

[Article by Admiral V. Selivanov, chief, Russian Main Naval Staff]

[Text] Our Navy's main purpose is to ensure Russia's security and defend its national interests. For this, we need to have a Navy which in terms of its composition, structure and fighting strength could reliably carry out deterrent functions in relation to possible aggressive intentions of other naval powers, and in the event of war, to ensure repulsion of aggression and the country's defense from ocean and sea directions.

In accordance with the defensive orientation of our military doctrine the Russian Navy must be ready to carry out the following operational-strategic missions: Maintaining the high combat readiness of naval strategic nuclear forces, defeating the strike groupings of the probable adversary's navy in seas contiguous to Russian territory, fighting the enemy's line of communication, defending the fleet's base areas and basing facilities, defending our own lines of communication and assisting ground forces.

In order to complete these missions, before the end of the 20th century we need to create a balanced, qualitatively new fleet equipped with modern ships, armament and military equipment. In this case we need to divest ourselves of ships that are obsolete and ineffective in combat respects, and solve the problems that have accumulated over recent years. What are these problems, and what are seen as their solutions?

The program of military ship building written for the period to the end of 2000 with regard for reductions in appropriations for construction of ships and for purchases of armament foresees continued construction and commissioning of the best of the existing ship designs in the fleets, and development of series production of promising, in many ways qualitatively new submarines and surface ships.

Creation of fourth-generation nuclear-powered submarines armed with a new missile system and intended for destruction of various ground targets of the aggressor is first among the promising projects. In addition construction of multipurpose submarines equipped with antisubmarine and antiship missile and torpedo weapons has been recognized as a most important direction in the development of submarine forces. This will make it possible to use them independently or augment heterogeneous fleet groupings depending on the evolving situation and the arising missions.

Ocean-going warships of the future will be represented by the multipurpose destroyer, which will be equipped with unified launchers for practically all types of missiles, and with a new surface-to-air system that can defeat airborne targets throughout the entire range of altitudes at ranges up to several tens of kilometers from the ship.

When it comes to sea-going ships, a small escort equipped with antiship and antisubmarine weapons of the same types as the destroyer with a somewhat smaller total ammunition load has assumed priority. The new ships will be equipped with effective electronic armament and with various types of support systems.

The program of military ship building also foresees further development of minesweeper forces, with special emphasis on introducing promising means of combatting the mine danger—self-propelled mine detection and sweeping systems working forward of the course, automated mine detecting systems, automated minesweeping control systems, etc.

Marine aviation, which will experience significant quantitative reduction (in connection with Russia's pledge not to have more than 300 naval land-based attack aircraft in the European part of the country, and with obsolescence of the airplane fleet), will significantly reduce its fighting potential, especially against ship groupings. In this case the deliveries of missile, ground-attack and reconnaissance airplanes to the Navy will decrease beginning in 1993. Qualitative development of fleet air forces is to occur through limited deliveries of modern warplanes (antisubmarine and fighter) and helicopters. Delivery of antisubmarine sea planes and multifunctional helicopters and creation of a promising, multipurpose shore-based airplane having the missions of revealing the surface and undersea situation, target indication and destruction of submarines and surface ships are also planned after 1995.

Coastal forces will be developed by refurbishing them with new types of armament and military equipment with regard for limits foreseen by the Treaty on Conventional Arms Reduction in Europe. The forces will receive new antiship missile systems and a mobile 130-mm artillery system.

Combat and technical support units will enjoy further development.

In addition to observing a balance in naval development, the problems of basing and supporting the technical readiness of fleet forces will be solved. In recent years the basing system developed under the influence of a number of objective and subjective factors that caused the level of base equipment to fall significantly behind the needs of ship forces. Due to a shortage of resources, the mooring front was basically created out of floating piers, 50% of which have already served around half of their useful life. Power supplies provided to ships and bases are also insufficient. Most of the equipment available in the fleets is obsolete and worn, and requires replacement or rebuilding.

The engineering systems of naval bases and naval basing facilities are unable to support not only alert duty but even ships at moorings. This is resulting in premature expenditure of engine life, additional expenditure of fuel, and unplanned ship repairs. Nor can we ignore the fact that geopolitical changes that occurred in recent years have disrupted 60-90% of the basing system of naval forces in the Baltic, Black and Caspian Seas, restoration of which will require 15-20 years. Moreover, subunits of the Baltic Fleet, the Black Sea Fleet and the

Caspian Flotilla that were withdrawn from outside the Russian Federation will have to be accommodated in 1993-1994.

There are less significant problems as well. Seventeen arsenals and weapon facilities need to be moved out of categorized cities, and new test ranges at which to test new weapons will have to be built.

There are plans for reducing the number of fleet basing facilities and other objects of the infrastructure in the next few years, together with partial mothballing wherever this is suitable. Efforts will have to be concentrated on developing and building the most promising facilities with regard for the real economic situation and the planned reduction of the Navy's effective combat strength. In this case, priority attention will be devoted to additional equipping of basing facilities for nuclear-powered submarines and large surface ships, and to erecting housing and social, cultural and personal service facilities. Creation of new bases will proceed on a limited scale, primarily to accommodate forces withdrawn from the territory of former union republics.

Timely repair is an important element of supporting the technical readiness of submarines and surface ships. However, because of the sharp reduction in financing volume (to 30% of the demand), the quantity of ships requiring repairs is increasing every year, and it is now in the hundreds of units. The situation is also complicated by the fact that with the disintegration of the former USSR a number of ship repair capacities have been lost, and the Navy's four plants have to build expensive ship raising structures, dry docks, covered building berths and deep-water quays.

Under these conditions the volume of ship repairs at industrial enterprises needs to be reduced by economizing on the service life of submarines and surface ships, and having the personnel of floating repair plants (floating shops) of naval large strategic formations and combined units carry out minor repairs.

Experimental technical maintenance of the most critical systems and mechanisms of nuclear-powered submarines by independent firms has begun. Equipment suppliers have established small specialized enterprises together with ship building organizations for this purpose. These enterprises provide technical maintenance to the most complex systems of nuclear-powered submarines.

Nor can we pass by another question that the Navy has to answer today: What is to be done with salvaging nuclear-powered submarines and burying radioactive wastes and reactor compartments from nuclear-powered submarines? A program adopted in 1992 by the government of the Russian Federation foreseeing creation of underground storage for submarine compartments and transloading bases for spent nuclear fuel, additional equipping of naval ship repair plants, and reconstruction of coastal technical facilities that recharge reactors and

collect and bury radioactive wastes is not being implemented in view of the absence of financing. In 5 months of 1993 less than one percent of the resources foreseen by the annual plan were appropriated. Adoption of a law on a state program on managing radioactive wastes is also being postponed. In this situation the Navy is forced to independently find solutions for the evolving situation, and allocate additional resources with which to salvage nuclear-powered submarines.

Manning the ships and units remains a problem to the Navy. It was aggravated even more with the adoption of the Russian Federation Law "On Military Obligation and Military Service," which lengthened the list of persons receiving deferments. As a result, in spring of this year the military commissariats were unable to call up 84% of the youngsters registered for the draft. On the other hand, the young recruits being provided to the Navy are unable to satisfy the minimum demand of the fleets for highly scarce specialists.

We believe the solution is to have large strategic formations, combined units, ships and units manned on a contract basis, which will make it possible to sharply raise the combat readiness of the crews and to reduce personnel turnover. This, in turn, will decrease the accident rate and reduce annual outlays on specialist training.

In 1993 the General Staff will be permitted to accept 100,000 specialists for military service on a contract basis in the positions of privates, seamen, NCOs and petty officers. In this case no limits have been established on acceptance of volunteers. Thus, the solution to the problem of manning the ships and units depends entirely on how well this work is organized in the fleets—that is, it is becoming one of the most important tasks of the command of large strategic formations, combined units and units.

Improving the organizational structure of the Navy is another priority problem. This work is proceeding in accordance with a decision of the Russian Defense Ministry to reduce the number of servicemen by a third in 1993-1994, and with regard for cancellation of the military ship building program and reduction of deliveries of armament and military equipment. Because the Navy is writing off a large quantity of obsolete ships and vessels (24% of submarines, surface ships and launches are to be retired from the Navy in 2 years), the lowest structures of a number of large strategic formations and combined units are being disbanded or reformed. However, the Navy's fighting potential is to be preserved at the 1992 level by introduction of new generations of ships into the fleets.

Improvement of the structure of both central and fleet administrative bodies is also foreseen. The main task is to have an optimum administrative staff corresponding to the new structure and numerical strength of the Navy and capable of leading the forces the most effectively.

We believe that this task can be completed by eliminating small subunits performing related types of jobs and creating larger bodies out of them capable of solving problems integrally; by bringing together peacetime and wartime administrative bodies; by adjusting the numerical strength of subunits to that established by the General Staff; and by eliminating many of the levels of administration.

The administration of the naval commander-in-chief is being switched to a new organizational structure in 1993. This will make it possible to focus the responsibility of one person upon the entire complex of issues in the life cycle of a given form of armament or military equipment.

By following the plan strictly, we hope that despite the difficulties being experienced in the country, in the next few years we will have a strong ocean-going RF Navy fitted out with modern ships, armament and equipment, and capable of defending the country.

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Chief of Navy Combat Training Interviewed

94UM0110B Moscow MORSKOY SBORNIK
in Russian No 8, Aug 93 (Signed to press 9 Aug 93)
pp 7-10

[Interview with Maj. General Avn Anatoliy Vasilyevich Tikhomirov, chief, Naval Aviation Combat Training Directorate, by Col Yu. Morozov; place and date of interview not given: "You Can't Live and Fly Without Faith"]

[Text] Throughout the entire history of naval aviation, from the moment of its creation and until today, its most important mission has been and remains the readiness to fulfill its basic purpose. The difficulties that are being endured by the entire country in this time of deep reform of the economic, political and social spheres have made their impact on naval aviation as well.

What problems are naval pilots confronting today? How are combat training missions being accomplished under these conditions? Major General of Aviation A. V. Tikhomirov, chief of the Naval Aviation Combat Training Directorate, answers these and other questions from MORSKOY SBORNIK.

[Morozov] Anatoliy Vasilyevich, let's begin with the most important thing. Given the present reduction of forces and resources in naval aviation, what do you feel is the most acute problem of combat training?

[Tikhomirov] The main and most acute problem for us is how to ensure, under these conditions, a level of combat training that would keep the reorganized fleet air forces from losing their fighting ability and allow them to be constantly ready to carry out the combat missions for which they are intended.

And this means that with all of the reductions and reorganizations, the main attention should be devoted to creating a basic nucleus of battleworthy crews, and maintaining their training level in the technique of piloting their airplanes and in the use of the system of weapons they carry, as well as their readiness to conduct combat activities.

Consequently we need resources, we need the material possibilities by which to allow every air unit to fly and train regularly, on the basis of the combat training plan, in the combat use of detection equipment and weapons. And when it comes to resources and material possibilities, they have become catastrophically short in recent years, now that settlement of mutual accounts according to the principle of market relations has been introduced into the armed forces, and as a result we are faced by the problem of providing flight training without flying.

[Morozov] In its combat training naval aviation can count only on the resources that are appropriated from the budget. Could you cite a few figures so that we could gauge its "wealth" today?

[Tikhomirov] I don't want to give any figures on financial resources appropriated this year for combat training in naval aviation because they do not reflect the real level of support in connection with galloping prices of fuel, and of spare parts with which to lengthen the life of aviation equipment.

What is important is that fuel, and POL in general, without which flying is impossible, is being delivered to the units extremely irregularly, even with the allocations being so extremely limited. Responsible officials explain this by a shortage of resources with which to settle promptly with suppliers. But this means that long interruptions are imposed on us frequently, resulting in the loss of skills previously acquired by the crews; moreover, additional material resources are then needed to bring the training level back up to where it used to be.

What is important is that because of the shortage of resources with which to pay for spare parts and machine units, a significant percentage of airplanes and helicopters in many of the units stand idle, and do not take part in the flying, as a result of which the effectiveness of flying shifts decreases, as does that of flying in general.

All I know is that naval aviation makes up 14% of all aviation in the RF Armed Forces, and that it has only been allocated 7% of the financial resources, which is doubtlessly unfair.

[Morozov] The proficiency of pilots depends directly on how often they take off. How many flying hours does a pilot in naval aviation accrue annually, and what is the trend in comparison with previous years?

[Tikhomirov] This year, in view of the reasons presented above, aviation units of the fleets had extremely few flying hours available, and therefore they were forced to use this time basically to maintain the training level of

crews that are already combat ready, and of regiment and squadron-level leaders as instructors, while part of the flight crew rank-and-file was on "starvation rations" for the entire winter. Therefore it would be wrong to average the flying time, to divide it by the number of pilots.

Those who have maintained their combat readiness flew an average of 20-25 hours in 5 months, which is also below what many years of practice have proven to be necessary. In past years the average flying time in this period was 45-50 hours, and this was enough for a pilot to advance in his professional skills.

Under our conditions a pilot (a crew) is provided only the lowest minimum, so that if need be, he would be able to carry out a mission with the lowest risk of failing as a result of his own mistakes.

[Morozov] Even with the low intensity of flying, we need to progress in the mastery of aviation equipment and improvement of flying proficiency. What new elements of combat training have been included in the flight crew combat training program for this year?

[Tikhomirov] I don't have enough courage to accuse the leadership of the fleet air forces and the air unit commanders of practically ceasing all attempts at including new elements, new tactics etc. in combat training. This is possible, you see, only when new models of weapons or new missions appear in the units, when changes are discovered in the armament and tactics of the probable adversary. And as you know, even the supreme leadership is now trying to inspire the confidence that we no longer have a real adversary, that one is not foreseen in the immediate future (he is perceived to be of some uncertain form and status), and new resources by which to hunt and kill naval targets are not reaching the units. So how can we talk about searching for and practicing new tactics? All the more so when combat training flights are being planned and conducted sporadically in view of known causes. At least in this situation we have managed to maintain the training level in regard to previously mastered tactics, so that we wouldn't lose the skills of aircraft piloting in general.

I would imagine that you are acquainted with an article carried by the newspaper KRASNAYA ZVEZDA on 30 June of this year revealing the causes of the lamentable state of training in take-offs and landings on ships, which is very important to naval aviation.

We are trying to make maximum use of ships cruises in order to train pilots to land on moving aircraft carriers, but such possibilities are extremely limited, and we are powerless to change the situation for the better.

As far as retraining for new aviation equipment is concerned, this process is proceeding at an even greater scale in naval aviation than before. The fact is that besides retraining for new deck-landing airplanes employing trampoline take-offs and arresting wire landings, we are also compelled to retrain a significant

quantity of crews in units undergoing re-equipment in connection with reorganization of fleet air forces. In this case when I say new, I mean not in the sense of when this equipment was developed, but new to these particular crews. And now that the navy has lost its retraining centers, the entire burden and responsibility for the success of this process is laid directly upon the commanders of line units, and this means on their chiefs.

We are quite well aware of our responsibility for organizing and conducting crew retraining, and we are doing everything we can to prevent undesirable costs in this effort.

It is very important to train the commanders themselves as instructors, because such functions cannot be entrusted to every commander, even ones who fly successfully and handle their responsibilities well. It is not enough to know training procedure; it is important to have the skills of employing the principles of training in the air, to be a pedagogue, and while it takes many years to develop a pedagogue, we don't have this kind of time.

[Morozov] Certain shortcomings were noted in combat training and plans for the summer period were adjusted on the basis of the results of winter training. What are these shortcomings, and how can the intensity of combat training be raised?

[Tikhomirov] Yes, the result of the winter period were clearly disquieting. Naval aviation underwent it on a "starvation ration." But as the defense minister said in a meeting with the editor's office of KRASNAYA ZVEZDA, "fuel is now flowing into the forces." It is my hope that it will also flow into the fleets, and that there will be some way to pay for it. We adjusted our plans so that things left undone could be completed in the summer period, and so that we could accomplish our missions in the most successful way, relying on full use of the appropriated fuel and equipment life.

We plan to use reserve flight shifts, and maneuver to other airfields. We will carry out the most difficult tasks by the so-called training rally method, under which persons undergoing such training are released from other duties, and several shifts undergo purposeful training and fly simultaneously at the most favorable times and under the best conditions.

[Morozov] The flying efficiency and accident rate of subordinates depend in many ways on the teaching skills of commanders. What is being done by the aviation command to improve them?

[Tikhomirov] I already talked about the importance of such skills in aviation commanders, and I can only add that the command of naval aviation attaches great significance to improving them.

In the absence of aviation centers, we cannot provide instructor training on the scale of all aviation as a whole. Consequently the entire burden of this work is being shifted to the staff of fleet air force commanders, and we

on our part are indicating the main directions of this work; also, what is most valuable is that we are working with commanders right at their places of work, in the units, including during our visits for our own personal flight training.

[Morozov] Concern for raising flight safety is not a fad or the result of overinsurance. Those who have devoted their lives to the sky do not lack in courage. But has the decrease in flying time caused an increase in the accident rate in naval aviation?

[Tikhomirov] How couldn't it...? Of course, the threat to flight safety has risen. But so far, we have been spared of accidents. I feel that's because we fly little, and because it is basically the most experienced pilots that are doing the flying. As for young pilots, we "keep them on a leash" when they fly. But this is not a solution to the problem. Our state of well-being is temporary. A decrease in flying hours results in loss of skills, and consequently in a danger to flight safety.

[Morozov] In flight planning, it is difficult to overstate the role of the staff, which organizes all measures directed at successful accomplishment of combat training missions. How well is coordination of the combat training department with other departments organized?

[Tikhomirov] I don't have any special difficulty in answering these questions because with the decline in flying intensity, staffs can take the time to recheck everything they do, and accomplish what is required of them. Flying orders are transmitted promptly, but the whole problem is that there is nothing with which to support the flying. Ships don't go out to sea—there's no fuel, and they need to economize on their service life. The practice ranges are begging for work, because airplanes rarely visit them.

[Morozov] In order to conduct naval or aerial combat successfully, you have to know the enemy. However, some of the mass media are loudly proclaiming that because of the "warming" of the international situation, we no longer have any enemies, and consequently there is no reason to devote great attention to combat training. How do you feel about such pronouncements?

[Tikhomirov] I feel them to be deeply mistaken. It is said that if you have armed forces and no adversary in relation to whom to train them, then you need to make one up. We are now orienting ourselves on an abstract enemy, and we are naturally teaching the personnel to fight a strong adversary with armament and tactics of the highest level. But there is an awful lot that is simulated, such that it is impossible for us to make the training process interesting, not to mention productive.

Observing the forces, armament and combat training of the fleets of other countries, we make corresponding adjustments in our combat training program.

[Morozov] Aviation is developing quickly: Theory, equipment and tactics are improving, and consequently a pilot must continually update and widen his knowledge both of his own air forces and of aviation of other countries. But with division of the Union, naval aviation pilot training centers located in Ukraine have transferred to its jurisdiction. How is the problem of reestablishing such centers in naval aviation being solved?

[Tikhomirov] The problem of reestablishing at least one aviation center is doubtlessly an urgent one, and its solution cannot tolerate postponement.

Unfortunately, not all persons responsible, even in the supreme leadership of the RF Armed Forces, attach sufficient importance to this problem, and they propose practical solutions that cannot work in the situation as it is. There are even those who have proposed that we organize a center at the aviation technical school in Kaliningrad, slated for closing. However, they ignore not only the fact that there are no conditions there for training flights, but also that you have to go over foreign states to get there.

Consequently the naval main command and the naval aviation command are continuing the search for the ways and the possibilities of organizing a center near the sea on Russian territory. However, this will take many years to do, and it will require considerable material outlays.

Such that for the moment we have to count on training and retraining personnel directly in the units, which complicates our work and the situation in the units a great deal.

[Morozov] One of F. Chuyev's poems contains the following words: "All ranks are equal among pilots, salutes are rare beside the runway, and in the air, shoulder boards are unnecessary, even marshals fly as pilots!" There are of course no more marshals in naval aviation, but how do things stand with flying by generals?

[Tikhomirov] As in all large strategic formations and combined units of RF Armed Forces aviation, while generals do fly, such possibilities are limited, as is true for all pilots.

[Morozov] In talking with pilots in the line units, you hear complaints addressed to the command such as: "You plan the flying for the following day, you work deep into the night scheduling the airplanes and instructors, when suddenly you get a call 'from above': 'I'll be flying with you tomorrow, plan a certain number of flights for me!'" And then everything has to be started all over, with people cursing and nerves raw. Or something like this happens: "General Tikhomirov flew over and used up all of the fuel allocated to the regiment for the flying shift!" Do you find such criticism levied against you as well?

[Tikhomirov] No, such a system hasn't existed for a long time now. There are of course certain attempts to avoid the established procedure, but basically, we firmly

adhere to the principle that position and rank have no bearing on the requirements a pilot must satisfy before any particular flight. Preparation must be timely and complete, then senior superiors must check the pilot's readiness for flying, after which permission for flying is granted. Then while in the air, the pilot must obey commands from the ground fully, and after flying, every flight must be subjected to meticulous analysis and objective evaluation.

Every flight in marine aviation is documented, and no allowances are made for generals.

[Morozov] Nor is there any doubt that the quality of combat training depends directly on social and personal problems both in the home and at work. The work of an aviator would hardly be sufficiently effective if he is unable to find a place to sleep on the night prior to flying, and if he is troubled by thoughts about the children's day-care center. Pilots also have to hear things like: "You're not only a pilot, you're primarily an officer!" This is what is offered as justification for the obligation to participate in details, to supervise housekeeping work, and so on. What does all of this benefit? Our professionalism? Combat readiness?

[Tikhomirov] You're right, but you've narrowed the sphere of influence of social and personal problems somewhat. While this is something I don't feel we should be broadcasting, it is true that besides finding themselves to be unsettled in their personal affairs like many other categories of servicemen, pilots have now become uncertain about tomorrow, about their foreseeable future. They have even come to feel that the country doesn't need them at all. And this is terrible. These factors must doubtlessly be considered by the command in solving combat training problems, and all steps must be taken to persuade people of the need for fulfilling their official duties unquestioningly.

[Morozov] Still, I would like to end our interview on an optimistic note. Do you believe that naval aviation will have its day, that the present difficulties are temporary ones? What would you like to wish your colleagues on the eve of your professional holiday?

[Tikhomirov] Of course I believe! You can't live, or the more so fly, without faith. Those upon whom the fate, material maintenance, professional skill, and social and even state meaningfulness of pilots depend will certainly come to understand aviators sooner or later.

And on the eve of our professional holiday, I wish that pilots and navigators of military aviation and their colleagues in naval aviation will be able to hang in there until the prestigiousness of the flying profession is recognized by the state, that they fully recognize their usefulness in serving our state, and that they constantly strive to improve flying proficiency! I wish clear skies and soft landings for all military aviators!

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Rear-Admiral Pauk on Future of Scientific Work in Navy

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[Article by Rear-Admiral A. Pauk: "Ways to Improve Scientific Work in the Navy"]

[Text] Arkadiy Alekseyevich Pauk was born in 1939 in Leningrad. In 1958 he was graduated from the Nakhimov School, and in 1936 from the Higher Naval School imeni M.V. Frunze. He subsequently served on nuclear submarines of the Northern Fleet, and was a submarine commander for five years. In 1977-1982 he served in the Operations Directorate of the Naval Main Staff. From 1983 to 1986 he was the First Deputy Chief of Staff of the Baltic Fleet. In 1988 he headed a leading scientific directorate of the Naval Main Staff, and in the autumn of 1992 he became the Chairman of the Naval Science Committee of the Russia Federation and a member of the Editorial Board of the journal MORSKOY SBORNIK.

Further development of the military-political situation in the world probably will be characterized by a continued tendency toward a lessening of the danger of outbreak of nuclear and conventional world wars, and also by an increased role of regional security structures in preventing and eliminating armed conflicts. However, evidently this tendency cannot be sufficiently stable due to the contradictory development of internal processes in regions which are potentially dangerous for international stability, such as the Near and Middle East, Southern and Southeast Asia, as well as hot spots on the territory of Central and Eastern Europe, the Transcaucasus and Central Asia. In addition, one cannot ignore the significant changes in the military-political and economic situation in Russia, which have posed a number of complex problems with respect to organization of the country's defense, manpower acquisition for its Armed Forces, and support of their daily activity.

All this requires that we devise new approaches to questions of organizational development of the army and navy, and methods of support of their combat activity, and this is possible only on the basis of profound theoretical research. In this regard, we should stress the idea that as long as military-theoretical thought "plods behind" military practice, the work of those people who make the decisions on the development and utilization of armed forces will be marked by "trial and error" methods, which often lead to significant inefficient economic expenditures. Any decisions in the military field which are at all serious must be based on profoundly argued scientific justifications. This is why military scientific work is now gaining such great importance.

In the broad sense of this concept, scientific work in the Navy is activity associated with the organization and conduct of diverse scientific research aimed at obtaining

new knowledge, its systematization, and the development of recommendations for practical implementation. [This work] is being carried out by all sorts of naval institutions (staffs, directorates, scientific-research organizations and military educational institutions). As applied to the Navy, armed conflict at sea, in all the diversity of its manifestations, is the subject of scientific research.

We know that in the process of scientific work, creative activity is inseparably linked with organizational work, the basic goal of which is to create the necessary conditions for successful conduct of research and the introduction of its results into practice, i.e. scientific work includes both content-related and organizational aspects. The content portion of scientific research, in the field of warfare at sea as a whole, is determined by the structure of military science and at present is specifically reflected in the approved basic trends and problems of research for 1991-1995. Naturally, the rapidly changing situation in the world and the country make their adjustments to our plans, but the basic trends of research are not undergoing any significant changes. Thus there is continuous research directed toward the development of new forms and methods of utilization of naval forces, improvement of the processes of their training, and creation of the weapons of warfare.

Along with military science, social, natural and technical sciences, whose military problematic is oriented toward accomplishment of tasks in support of strengthening the national defense, raising the combat capability and readiness of naval forces, and creating up-to-date weapons and combat equipment, play a significant role in the knowledge of war, including armed conflict at war. Such a broad aspect of studies is limited by the quite definite amount of manpower and assets which may be used to perform research. No economy could support the requirements for manpower and assets that one would like to have to do the necessary research. Therefore the questions on the agenda are: how can we distinguish from the necessary spectrum precisely those trends and problems whose research would bring the maximal effect, how can we distribute manpower and assets for this research and how can we organize their accomplishment with maximal quality?

Theoretically the scientific methods for resolving these problems do exist, but in practice voluntarism and a departmental approach are still possible, so that the individual rivulets of research do not always merge into a single powerful stream, manpower and assets are spread thin, and the results obtained may not be implemented for some time.

Now, without a war the Navy has suffered significant losses in combat personnel, its ship-building and ship-repair base, the system of rear service and technical support, scientific-technical potential etc. We must realize that in the near future we will not be able to build any significant series of new ships or submarines, or carry out large-scale restoration of the systems of rear

service and technical support or ship-repair, or support operational equipping of theaters. That is why we cannot allow further destruction of the scientific-technical potential which it has taken years to create, but on the contrary must activate scientific work, build up (even if just "on paper" for now) new ideas and solutions in the field of construction, preparation, and utilization of naval forces, at least to the stage of recommendations, tactical-technical assignments, preliminary and technical projects for the creation of new means of armed conflict and improvement of existing ones. This will assure continuity of the process and adequacy of the volume of research, which come about for at least two reasons.

First of all, a reduction in the volume of research (or a reduction in scientific potential, which in this context is the equivalent) will lead to an exodus of the most qualified cadres from the NIOs [scientific-research organizations] and VUZ [military educational institutions] whose training required years and entailed great expenditures of resources. At the same time, if it becomes necessary to renew research in previously closed directions, years and years will be needed to train new science cadres. And if the "old" science cadres return under the banner of new research, they will begin their work only with the positions and results at which they had stopped earlier, and again it will take years to reach the appropriate level of knowledge. As we know, science does not march in place, and the volume of information is growing constantly.

Second, scientific studies in the military field must be carried out continuously, but by no means all of the results obtained are necessarily implemented in practice. Speaking of theoretical research on questions of utilization of naval forces, for example, the developed recommendations may be tested without particular expense in operational and combat training actions, and if the results are positive, may be included in the governing documents. But when it comes to the weapons of warfare, research on specific models and equipment may conclude at the stage of preliminary or technical projects. In this case, it is important not to lag behind the most progressive ideas in the field of their development, and at any moment to have not only a scientific-technical reserve, but also specific gains. Objections that such activity will lead only to unproductive expenses are not correct, since spending for such research amounts to no more than 3% to 5% of all naval appropriations for scientific research, development, testing and engineering.

In this context, the organization of research is acquiring ever-greater importance. Its basic elements include: a system of leadership of scientific work, and its planning and coordination; improvement of the network and structures of scientific research associations of the navy and scientific research subunits of VUZ, training and assignment of science cadres, the mechanism of financing of scientific work and material incentives for the labor of scientists, and material-technical and information support of research. Analysis of the practical

activity of naval institutions shows that the organization of scientific work is in need of improvement, and that there are certain areas in which it can and must be improved.

The basic scientific potential of the Navy is concentrated in the Scientific Research institutes (NII) and the military educational institutions (VUZ). In conducting research, the NIIs and VUZy cooperate closely with experimental organizations (ranges, bases, centers) which also comprise part of the scientific potential of the Navy and often conduct independent research. However the volume of work performed by these three components varies. For the NIIs it is around 80% of all scientific-technical production, for the VUZy 17%, while that of the other naval organizations is 3%.

What is more, experience shows that with roughly an equal number of personnel of scientific sub-units of NIIs of the Navy and personnel of the naval VUZy participating in research, and also with an identical number of accredited scientists, the importance, topicality and depth of treatment of scientific problems in them, and the practical value of the results obtained in naval NIIs is significantly greater than that obtained in naval VUZy. This may be explained by the fact that for the professors and instructors of the VUZy, support to the training process comes first, and also [may be explained] to some extent by the fact that their information level lags behind when it comes to developing and using promising models of naval weapons and equipment, although this far from justifies the fact that the capabilities of the VUZ in this work are not adequately utilized. Here one could also mention the virtual absence of material incentives, the depersonalization of scientific labor, and so forth.

Today the main factors affecting reform of the composition and structure of naval NIIs are: the general reduction of the Armed Forces and the decrease in the amount of financing for research. The former leads to a reduction in the numbers of service members in NIIs, and the latter to an analogous reduction in the numbers of [civilian] employees.

I would like especially to examine the system of leadership of scientific work in the Navy. The existing structure of leadership organs of scientific work in the Ministry of Defense, and indeed in the other departments, has developed under conditions of a planned centralized economy and corresponded fully to them. However, in the period of half-chaotic development of the market economy, elimination of a number of state structures (ministries of defense branches of industry, Gosplan, the State Commission on Military-Industrial Questions), destruction of the mechanism of centralized planning of research and a sharp cut in spending for it, we need a new approach in defining the purpose, missions and structures of the leadership organs of scientific work in the navy.

In this regard, the clarified functions and structure of the leadership organs of scientific work in the Navy are as follows.

General leadership of scientific work in the Navy is provided by the Navy CINC through the Naval Scientific Committee. The activity of the latter includes all directions and forms of research in the field of military science, and also the military problematic of natural, social and technical sciences implemented by organizations which are part of the Navy. Here it is advisable to reduce the number of official buyers of scientific-technical products for the Navy, in order to centralize the organization of scientific work, eliminate excess duplication, concentrate efforts on research into the most urgent problems, and efficiently spend financial resources. In this case all interested organizations retain the right to receive scientific-technical products, but the procedures for financing the conducted tasks will change. Orders for research in which the NII and VUZy of the Navy act in the capacity of chief executors must be sent to the leadership organ of scientific work of the Navy, and only after analysis and expert evaluation will they be included in the corresponding plans. But administrative subordination of the scientific research associations to the client directorates of the corresponding type has been officially accepted and corresponds to the existing procedures for the flow of orders, so until reorganization of scientific work, re-subordination of them to a single organ is hardly advisable. Only subsequently, allowing for the diversity of scientific organization of the Navy and their real capabilities to accomplish research, and in order to centralize the leadership, one can speak of a stage-by-stage subordination of scientific work in the Navy, on the part of all naval scientific research institutes and centers to a leadership organ. Test ranges and experimental bases, and individual independent laboratories whose basic form of activity is testing of specimens of weapons and military equipment, must remain under the subordination of the corresponding naval directorates or fleets.

In the fleets the leadership of scientific work also must be implemented by an organ especially created within the structure of the staff, but its sphere of activity must be limited to special areas and forms of scientific research corresponding to the specifics of activity and the capabilities of the fleet organizations and institutions. In the fleet formations, the leadership of scientific work must be exercised by chiefs of the corresponding staffs through specially created sub-units. Here the system of organs of leadership of scientific work in the Navy must combine collegial methods decision-making on the most important questions with strict centralization and a hierarchical structural principle.

The basic drawbacks of the existing system of scientific work (in its organizational portion) which decrease its effectiveness are:

- Orientation of the planning of scientific work in an NII not so much toward the ultimate goal

- attainment of the necessary qualitative and quantitative indices and efficient accomplishment of the tasks assigned to the Navy

- as to justification of the existing organizational structure of the NII (at least one task must be done in each structural sub-unit).

- Division of the single process of scientific work into three relatively closed cycles: fundamental research, internal scientific research work, and external NIOKR work (each cycle functions independently, and as a closed cycle, has its separate financing and system for evaluating its effectiveness).

As applied to internal scientific research work performed by a naval NII, such a self-contained research has also presupposed the capacity of the institutes to conduct full-fledged scientific research in all problems of interest to the Navy. This in turn determines the large number of officers and employees in the NII, despite which the effectiveness of the NII in attaining the ultimate goal remains low. This also applies to the cycle of fundamental and basic research performed by organizations of the Academy of Sciences and the higher school. Frequently cut off from tasks of developing weapons systems, in the most complex problems they never go beyond the framework of purely fundamental research.

With allowance for the need to overcome these drawbacks in the system of scientific work as applied to market conditions, the following directions of reform of its organization are proposed.

It is proposed that we abandon the system of assigning individual scientific research tasks and work, and use a targeted program method, which makes it possible to combine the whole process of efforts in the scientific-technical field, from formation of the developmental concept of the weapons systems to manufacture of models. Programs must be compiled for the major problems of development and utilization of the Navy or development of the most "critical" technologies, and cover the whole group of scientific-technical, scientific and organizational measures necessary for their comprehensive and complete resolution.

The structure of the programs allows for the presence within them of several relatively independent branches. Program administrators are appointed from among the clients, the leading organizations are assigned from among the executors, and scientific leaders are appointed personally. Special funds, for example a fund to support new (innovative) high-risk work, command funds for performing urgent operational studies and so forth may be formed to finance part of the work which is not included in any of the programs.

The transition to integrated, targeted programs must lead in time to transformation of the concept of the NII. There will no longer be a need to constantly maintain a special scientific sub-unit and the corresponding number of scientific associations in each rather minor scientific area. To perform new tasks, it will suffice to have a small number of trained officers in the individual research

fields capable of resolving a broad spectrum of problems in broad scientific areas and to organize the research, with recruitment of the necessary specialists. However this does not rule out the need to retain the existing scientific potential in fields which are specifically naval in character, or those in which generally recognized competent scientific schools have developed.

As the targeted-program method is implemented, a prospective plan of scientific work of the Navy will constitute a list of areas, problems and programs of research, with indication of deadlines, clients (leaders), cooperation of executors, ultimate goals and oriented distribution of resources. It must be developed by the organs of leadership of scientific work in the Navy in accordance with proposals of staffs, the central apparatus of the Navy, and NII and VUZy. The targeted programs are included in the plan as they are formed. Here the forms of such prospective plans will not vitally change. If a more detailed description of the content of individual targeted programs is required, it should be in the capacity of supplements to the plan. These should also include lists of priority KNIR (integrated scientific research work) not included in the program.

Distribution of resources is one of the most important functions of planning. As applied to planning of scientific work, this means the distribution of scientific potential and resources allocated for scientific work (specially by area, problem and program) and for individual scientific-research tasks, and their assignment to clients. It is implemented by the organ of leadership of scientific work under the general client. An adequate assessment of the volume of work and the problem of price formation are key questions here. While for organizations performing an established cycle of research which does not demand significant expenditures for new equipments and materials, everything can be boiled down to determining the labor intensity, contracting with outside organizations requires a more flexible attitude toward this problem, and recognition of the legitimacy of a concept such as use value, along with expenditure and calculation methods of price determination.

Coordination of scientific work is a component part of the processes of planning, distribution of resources, and information support. It is not necessary to create any special organs for its implementation, or to conduct any additional measures. However, especially at the interspecific level, excessive classification of information about tasks performed is a hindrance. One should also allow for the fact that in the transition to the market, along with modal limitations there will inevitably also be restrictions of the commercial type, and one must consider how to weaken this obstacle.

Financial support is a most important element of organization of scientific work. Overall the financing procedures for scientific work now in existence cannot be deemed satisfactory, and the prevailing situation of their financial support can be called critical.

Preservation of scientific potential, and the need to raise the effectiveness of its use with allowance for an increase in the role of scientific justification of the prospects of construction, training and utilization of the Navy, demand new approaches to financial support of scientific research, the essence of which, in my view, consists in the limitation of influence of the market economy on the activity of the military scientific organizations and more effective utilization of the financial resources allocated by the Defense Ministry.

The period of utilization of such a financing mechanism must be continued until the moment of full introduction of the targeted program method of organization of scientific work, after which it will be necessary to switch to a system of regulated prices for all scientific-technical products created by scientific organizations on orders from the Defense Ministry. For scientific-technical products created on orders from other departments, it would be advisable to use contract prices which assure a market evaluation of their level.

Information support of institutions of the Navy for more complete utilization of the existing attainments of science and technology in the accomplishment of scientific research, development, engineering and testing tasks is another important organizational question of scientific work. It seems to me that the leadership of the system of scientific and technical research must be exercised by an organ supervising all the scientific work in the Navy. Responsibility for the immediate status and development of such information activity must be borne by the leading and base organs of scientific-technical research of the Navy, which possess the data bases and specialized scientific-technical information resources in specific areas of development of science, weapons and equipment.

Under the new economic conditions, and given the sharp price increase of information materials, in order to preclude unjustified duplication of acquired information products, the equipping of the Navy with scientific-technical information resources should be concentrated in the leading and base organs of scientific-technical research of the Navy in accordance with their assigned research specialties, and scarce, expensive and hard-to-get materials of the open fund should be in the Central Naval Library. Therefore, in order to make information support of the Navy accord with the present-day requirements, it is necessary to devise a targeted, integrated program which must provide for scientific justification of basic directions, for development and realization of the plans for deliveries of technical assets, and for the conduct of organizational measures under the condition of targeted financing of a given program and so forth.

When considering the problems of improving scientific work in the Navy, one cannot avoid the question of utilization of scientific cadres. In our practice up to this point, there have been a number of deficiencies. These include the striving for maximal "coverage" of officers

and employees involved in scientific work with academic degrees regardless of the qualitative aspect of the question, the virtual depersonalization of the labor of scientists, and the absence of a direct relation between dissertation research and subsequent activity, which affects the quality of scientific research work as well as the level of implementation of research results.

It appears advisable to take steps to shift the weight of system functioning toward qualitative indices, and to strengthen the role of scientific cadres and their interest in improving their scientific qualifications, including:

The posts of chiefs of NIIs, and possibly also the chiefs of NIUs [scientific research directorates] need not be held by scientists with degrees. Good administrators can hold these posts; with the transition to integrated targeted programs, the leader of an NII can also be the scientific leader of a branch KTSP [not further expanded]. In this case he must be an accredited scientist, but then he must be relieved to the maximal possible degree from administrative functions.

In posts which are to be manned with doctors and candidates of sciences, there should be higher pay. Persons holding these posts but without scientific degrees will receive less pay. This approach, instead of the customary wage increases, will stimulate the efforts of officers to improve their scientific qualifications. The training of scientific cadres for NIIs should be implemented chiefly through competition.

It would be advisable to leave unchanged the system of accreditation of scientific and scientific-pedagogical cadres, including the network of specialized councils, the nomenclature of specialties of scientists, and the procedures for preparing and defending dissertations and so forth.

Such in my opinion are the basic directions for improvement of the scientific work in the Navy.

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Project 645 Experimental SSN

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[Article by V. Vildin: "Experimental Torpedo SSN Project 645"]

[Text] Whereas the first (experimental) nuclear submarine of the fatherland, the project 627 "Leninskiy komso-mol" has already been described in detail in our and the foreign press, non-specialists know practically nothing of the Nuclear Project 645 Submarine. But this was our first nuclear submarine which used a power plant (EU) completely different from what was on the serially-produced boats of the day. While they (the 627-A) had reactors of the so-called water-cooled and water moderated type, in which water of high purity was the coolant,

in this the coolant was a mixture of lead and bismuth, and the reactors were called liquid-metal reactors.

As is known, in 1953 the U.S. began construction on one of the first nuclear submarines, the "Sea Wolf," which was equipped with a fast-neutron reactor and had a liquid-metal sodium coolant. In our country the first nuclear submarines were developed with different power plants by a special group under the supervision of V.N. Peregudov and organized in Moscow in late 1952. Work on both variants was conducted in parallel, but of course with a small lag for the boat with the liquid-metal reactor.

But before beginning the story of the development of the Project 645 Nuclear Submarine, it is necessary to explain what advantages and disadvantages the developers saw in the use of a steam-generating plant (PPU) with reactors that used a liquid-metal coolant (ZhMT). In the opinion of the designers, the advantages of such a plant were:

- lower pressure in the primary circuit than in a water-cooled, water-moderated reactor, thus lowering the stresses on its fittings;
- a pressure in the primary circuit lower than in the secondary circuit, precluding the dispersion of the coolant to the latter and the energy compartments as a whole in the event of an accident;
- the possibility of using relatively cheap, low-alloy steels of the pearlite class in the PPU structures;
- the attainment of high coolant parameters in the PPU in comparison with superheated steam;
- better repair capability of the power plant in comparison with one using a water-cooled/water-moderated coolant.

At the same time, specialists understood that steam-generating plants with liquid-metal coolant also had disadvantages, such as "high cost of the coolant and its greater weight; the need for periodic regeneration of the alloy to maintain its purity, and perhaps most importantly, the primary circuit required that it be kept in a heated state, even when tied up at base, in order to avoid freezing of the alloy, thus complicating base maintenance."

A group of specialists of the OKB [experimental design bureau] "Gidropress" was assigned the task of developing a steam-generating plant with a liquid-metal coolant. (At the time the chief of this organization was B.M. Sholkovich, later replaced by V.V. Stekolnikov). Overall scientific leadership of the project belonged to the Physics and Power-Engineering Institute of the State Committee of the USSR for the Use of Atomic Energy, and was directly under Academician A.I. Leypunskiy. At the same time, the steam-generating plant with the water-cooled/water-moderated reactor was developed by the NIIKhIMMASH [Scientific Research Institute of

Chemical Machine-Building] under the scientific leadership of the Institute of Atomic Energy of the USSR Academy of Sciences. One should also note that besides the "Gidropress" experimental design office, associates of the SKB-143 [Special Design Bureau-143 (now the SPMBM "Malakhit") and specialists of the Main Directorate of Ship-Building and other structures of the Navy also played a very active role in designing the steam-generating plant with liquid-metal coolant.

In designing both ships, V.N. Peregudov, then chief and main designers of the SKB-143, strove to ensure that to the extent possible they had the identical architecture and ship-building elements (number of compartments, purpose, armament, type and power of turbines, etc.). The design documentation of the 627-A submarine was therefore taken as the basis, and because of this it was not necessary to do a feasibility study or preliminary design.

Direct work began right at the stage of technical design in 1955. By this time A.K. Nazarov had been appointed chief designer in place of V.N. Peregudov, and the chief supervisor was Aleksandra Nikolayevna Donchenko, THE ONLY WOMAN IN THE HISTORY OF THE SOVIET NAVY to graduate from the Naval Academy (VMAKV imeni A.N. Krylova) and having the rank of Engineer/Captain First Rank. She was later replaced in this post by Capt. 2nd Rank A.S. Gubkin.

As was planned, both nuclear submarine designs had the identical architecture. They had small sails, a long hull, which constituted a nearly cylindrical body, and also enlarged vertical and horizontal stabilizers in the after end. There were some differences in the shape of the forward end: While in the the 627-A it was completely spherical, in the 645 it was so only in the underwater portion to the waterline; while the top part of the nonpressure hull in the bow was conical both in the horizontal and in the vertical planes. This was perhaps their only outward difference.

However, on the inside these boats differed rather significantly. Besides the fundamental difference in the designs of the main power plants, this was also due to the fact that in the 645 the designers had allowed for the majority of naval requirements (no special tactical-technical specification was issued for the design of nuclear submarines of this type by the Navy) which there had not been time to introduce in serially-produced submarines of the 627-A design. Implementation of all Navy requirements led practically to the development of a new design, which would have delayed the construction of the already-laid series of 627-A boats. The power plant of the 645 submarine had the first nuclear turbo-generators (ATG). This provided a simpler and more stable supply of electricity to the loads in the boat. Reliability of the power plant was significantly improved. As a result, the idea arose that if there was an ATG, then the auxiliary diesel-electric power plant, provided in the 627 and 627-A boats was not needed.

(However, jumping ahead it must be noted that subsequent operating experience with nuclear submarines revealed the error of this).

Installation of the ATG also changed the purpose of a number of compartments of this submarine in comparison with the 627-A. Here it was as follows: The first compartment was the torpedo compartment; the second the battery and berthing compartment; third the central post; fourth the reactor compartment with steam-generating plant (in the 627-A this contained the auxiliary mechanisms); fifth the compartment for turbo-generators, diesel-generators, refrigeration plant and other auxiliary mechanisms (in the 627-A this was the reactor compartment); sixth was the turbine compartment with enclosure for the power plant control post; seventh was the electromechanical compartment, with electric propulsion motors and other electrical equipment; eighth was a berthing compartment with main refrigeration machinery and the ninth was also a berthing compartment, but with the steering apparatus and their drives.

Structurally the project 645 nuclear submarine was designed to be a double-hull boat with pressure hull of ship steel having a yield strength of 60 kgf/mm². The flat between-compartment bulkheads in it, designed for a pressure of 10 kgf/cm² were an innovation in submarine building of the fatherland, making possible, in the event of flooding of one of the compartments of the pressure hull, emergency surfacing of the submarine from a depth of up to 100 m. This was also furthered by certain other technical designs aimed at improving survivability and insubmersibility of the 645 submarine. But the 627 and 627-A submarines had only four spherical between-compartment bulkheads designed for such pressure.

Another technical innovation provided for the 645 was the use of low-magnetic steel for forming the structures of the nonpressure hull and the superstructure and sail. This helped reduce the weight of the submarine degaussing gear (RU) by half, to significantly reduce its power consumption, and also to significantly simplify questions of accommodation of the degaussing cable in the pressure hull, thus raising its survivability. However, as subsequent operation of the 645 submarine demonstrated, both the low-magnetic steel, a new structural material for the time, and the submarine degaussing gear used on this ship had serious technical deficiencies. These were due first of all to the newness of the design solutions, and also to the lack of sufficient study of the properties of such steel.

In those years the USSR had just begun mastering low-magnetic ship steel, its production and working, and the technologies of manufacturing structural elements from it. The basic negative factor which subsequently led to abandonment of low-magnetic steel for these purposes was the low corrosion and mechanical strength of the latter. Because of the action of the sea environment, the

inter-crystalline corrosive process was actively developed in such steel, with the result that cracks appeared in it.

In comparison with the prototype project 645, plans were to install a submarine battery with 23% less capacity in it. This was because the starting and cooling modes required the new steam-generating plant significantly less electricity expenditure. Besides this, there was a second, anti-aircraft periscope mounted in the central post, and in the first compartment the first rapid torpedo-loading device (UBZ) in nuclear submarines of the fatherland.

According to technical project 645 (working drawings were ready in 1957, and operating documents a year later), this submarine had the following basic tactical performance characteristics: Surface displacement 3414 m³, underwater displacement around 4370 m³; reserve buoyancy around 27%, maximum length and beam of nonpressure hull, 109.8 and 8.3 m respectively; draft (in cruising status, average), 5.85 m. Submersion depth was 300 m; range at a speed of 30.2 knots was around 35,400 nautical miles (under water); self-sustaining period with respect to stores, 50 days, crew strength 105 men, including officer personnel. The main power plant included a two-reactor steam-generating plant, double-shaft steam-turbine plant (PTU), two ATGs, storage battery (AB), diesel generator (DG) and auxiliary mechanisms intended for their servicing.

Each reactor had a steam output on the order of 97 t/h and thermal power of around 74,000 kW. In contrast to the prototype, the nuclear reactors did not have water-iron biological shielding, but a water-lead shielding, which possessed higher mass-dimension characteristics. The steam-generating plant of the 645 did not differ from its analog used in the prototype: It included two main geared turbines (GTZA) which in turn consisted of a single-stage impulse-reaction turbine, double reduction gear, and condenser. The power of each GTZA was 17500 h.p. and that of each of the main electric propulsion motors 450 h.p. The power plant of this submarine provided a high speed on the surface of 15 knots, and an underwater speed of 29 knots (maximal 30.2 knots).

The experimental Project 645 nuclear submarine was developed as a torpedo submarine. For these purposes it accommodated eight 533-mm torpedo tubes in its forward end and in the first compartment. The torpedo armament of the boat differed from the analogous armament of the 627 and 627-A boats only in that it had rapid torpedo-loading gear. This UBZ was equipped with individual torpedo-feeding mechanisms for each of the torpedo tubes, allowing simultaneous loading of torpedoes into any four selected torpedo tubes. The racks of the first compartment held 12 reserve torpedoes, and the total basic load of torpedoes on the submarine was 20. The torpedo tubes, along with the PUTS [torpedo director] system "Leningrad" and the submarine listening set "Arktika-M," gave the capability of executing

non-periscope-assisted attacks both when firing individual torpedoes and when firing a sheaf at gyroscope angles.

In the process, both electric and steam-propelled torpedoes of 53-cm caliber (for example models 53-57 and 53-61) could be used for bubble-free fire (from depths down to 100 m at any speed). The 645 submarine was not assigned a mine-laying mission. The technical equipment of the boat, the sonar and radar devices (the "Nakat" station and the RLK-1 with extendable antennas), and communications and navigational gear (navigational complex "Pluton-2"), except for the second periscope mentioned above, were identical to those on the 627 and 627-A.

The technical design of this boat and its power plant was completed in 1956. The boat itself was laid two years later, at the Molotov (Servodvinsk) Ship-Building Plant No. 402 (now the Production Association "Severnoye mashinostroitelnoye predpriyatiye") which at the time was headed by Ye.P. Yegorov. Another plant member, A.A. Ovchinnikov, was appointed the chief builder of the boat and official responsible for delivery. Unfortunately, because of missed deadlines for deliveries of contracted equipment and defects in it, and also because of repeated corrections of the working drawings of the power plant, construction of this boat was delayed. It was only launched on April 1, 1962; i.e., almost four years later. Fitting out in the water and dockside trials lasted until January 1963. Another nine months were required to complete the program of sea and state trials, which were completed on October 30 of the same year.

On April 20, 1964, under the command of Capt. 1st Rank I.I. Gulyayev, the submarine set out on its first long voyage with full self-sustaining status. For successful accomplishment of the missions assigned for this voyage, her commander, who incidentally made an enormous personal contribution to resolving the questions of accident-free operation of the new equipment, was awarded the title of Hero of the Soviet Union. During this voyage, its main designer A.K. Nazarov, and the head of the state acceptance commission, Vice-Admiral G.H. Kholostyakov, were also on board. At that time a number of its developers were awarded the Lenin Prize.

The second voyage in performance of combat service missions was made by the submarine from 15 July to 13 September, 1965. The ship was commanded by Capt. 2nd Rank P.F. Leonov, while Capt. 1st Rank A.P. Mikhaylovskiy was the senior officer on board. In this voyage, as well, the ship successfully accomplished its missions.

As planned, after return from the second voyage, the boat was certified and the necessary repairs were performed on it. After they were completed, the reactor core was refueled and the crew began performing their missions. However on 24 August, 1968 during a routine departure of the submarine for sea, a breakdown of the port steam-generating plant occurred, a thermotechnical

failure of the core accompanied by a drop in power level of the reactor. As a result, personnel were irradiated. Upon its arrival in base, and she returned there independently, her personnel were taken off and hospitalized, but nine men died.

After the power plant and the boat as a whole were certified, allowing for the serious consequences of the accident, and also the inadvisability of restorative work, it was removed from navy service. As an experimental ship it had served its purpose, giving our specialists the chance to acquire the necessary practice in building shipboard nuclear power plants with liquid-metal cooling, and also to make an assessment of their promise. Overall the results obtained were deemed to be positive and served as the basis for the subsequent development of new nuclear submarines for our Navy.

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Rear-Admiral Mazin on Manpower, Contract Recruitment

94UM0116A MORSKOY SBORNIK in Russian No 9, Sep 93 (Signed to press 7 Sep 93) pp 53-55

[Interview with R-Adm. N.I. Mazin by Capt. Second Rank A. Veledeyev: "Light and Shadow of Contract Service"]

[Text] *Beginning 1 March 1993 in accordance with the Law of the Russian Federation "On the Military Service Obligation," contract service was introduced into the Armed Forces of the Russian Federation for sergeants, petty officers, soldiers, and seamen. Essentially this legislative act established the legal basis for the transition to a mixed principle of manning of the Army and Navy: By conscription and by contract. To what extent was the Navy prepared for this? What difficulties did it encounter? Our outside correspondent speaks about these and other problems with R-Adm. N.I. Mazin, chief of the Organization/Mobilization Directorate of the Main Staff of the Navy.*

[Veledeyev] Nikolay Ivanovich, to what extent, in your view, does contract recruitment resolve the problem of the personnel strength level of the Navy? Because as far as we know the results of this year's spring call-up are quite disappointing....

[Mazin] The developing situation is indeed extremely complex. In accordance with the new legislation on conscription, in the current year, meaning in the spring and fall, we will obtain about 10 percent of the personnel that we need from the military commissariats. And the quality of the personnel called up leaves something to be desired. The Navy, as a highly technical branch of the armed forces, bears the heaviest "losses" from this reason, if one can put it this way. What level of servicing of equipment and armament and what sort of breakdown-free rate of its operation can we expect if illiterate people—in the direct sense of the word—come to us? In

such conditions, we place great hopes on the signing of contracts with the best trained petty officers and seamen.

[Veledeyev] But for precisely first-class specialists to remain in service in the Navy, one needs material incentives: Under the present conditions of general commercialization, this is apparently just about the main factor in the choice of one's path in life. But what can the Russian Navy offer to a person who has expressed a desire to sign a contract with it?

[Mazin] Upon signing a contract, seamen are paid a one-time sum in the amount of one pay period for their duty, whereas for petty officers it is one pay period for their military rank (from 33,500 to 37,500 rubles [R]). The total monthly pay for contract service may range from R43,500 to R88,800 for personnel in service afloat and from R33,500 to R60,200 for personnel in shore units of the Navy.

[Veledeyev] If, for example, I am a radar operator and I serve on a surface ship of the Northern Fleet....

[Mazin] Then, taking into account the rating assigned to the radar operator (fifth), you will receive on the order of R60,500. But it will be even more than that on board a nuclear submarine at, say, Kamchatka—R88,800. In addition, there are extra allowances beyond the basic pay: From 15 to 100 percent for service in remote places and in regions with severe climatic conditions, from 5 to 40 percent for years in service, and from 3 to 7 percent for a proficiency rating. Extra pay is also foreseen for special conditions of service.

If the ship is on a long cruise abroad, the pay is increased by 50 percent and there is also a daily allowance of 6.5 U.S. dollars.

Servicemen serving under contract are provided free food and gear. For professionals, the Law "On the Status of Servicemen" also provides for a number of other privileges that are quite significant.

[Veledeyev] And how is the question of the provision, as you said, of servicemen with housing resolved?

[Mazin] To the extent possible, those with families are given service housing space or are paid a monthly monetary compensation for its subleasing. In addition, after five years of service the contract serviceman has the right to obtain housing on a general basis. Bachelors will live in separate accommodations at the barracks and, if conditions allow, they will be granted a place in dormitory-type quarters.

[Veledeyev] All of this is good but where will the Navy, which already has enough "homeless," find housing for contract people as well?

[Mazin] The housing problem is indeed acute for the Navy at this time: More than 20,000 officers and warrant officers are listed as being without housing. But this situation has stabilized at a number of posts and vacant

housing has even appeared at some of them. The initiative of the command also plays a role here. At the submarine posts of the Northern Fleet, for example, they are making a substantial effort to resolve the housing problem of contract personnel. The conversion of the barracks inventory and the introduction of new dormitory-type quarters is also a substantial reserve in the resolution of the housing question for those who have decided to become military professionals.

[Veledyev] Nikolay Ivanovich, you described a number of privileges that benefit contract servicemen. But what requirements must they meet themselves?

[Mazin] Petty officers and seamen as well as civilians who have expressed a desire to perform contract service must fully meet the service requirements for specific specialties in different arms of service of the Navy, that is, they must have a specified state of health and physical development, general education and professional training, and moral and psychological qualities.

The determination of how well the qualities of the candidates meet the set requirements has been assigned to certification boards established in the military units. In the signing of contracts, they are guided by the "Temporary Statute on the Performance of Military Service in the Positions of Soldiers, Seamen, Sergeants, and Petty Officers Under Contract in the Armed Forces of the Russian Federation" and also by the appendix to Article 10 of this statute, which gives the form of the contract between a person entering into military service and the commander of the unit acting in this case on behalf of the Ministry of Defense of the Russian Federation.

[Veledyev] And to whom can those turn who, while presently working in civilian life, have decided to sign a contract with the Navy?

[Mazin] Previously the military commissariats dealt with the call-up of petty officers and seamen of the reserves to military service and with the selection of candidates for military academies and schools for warrant officers. Now they have also been given the job of selecting candidates for military professionals. But here, unfortunately, there are some "underwater reefs."

[Veledyev] What do you mean?

[Mazin] Structurally the military commissariats are linked to the commands of the military districts in whose territory they are located. It is understandable that the military commissariats strive primarily to provide their own districts with contract personnel. The Navy does not have a structure of its own that would deal directly with local contract recruitment. For this reason, the flow of candidates to the fleets is quite meager, especially from the central regions of Russia. On the other hand, the lack of the necessary financial means does not allow the fleets to send officers to the localities to select those wishing to serve in the Navy under contract.

[Veledyev] And what, in your view, is the way out?

[Mazin] I propose that in the future we go to a system of recruitment that will include direct recruitment centers in the localities and an extensive network to advertise for professional military service, including in the Navy. Today one frequently encounters a situation in which many petty officers and seamen, even on ships and in the units, do not know the advantages and privileges that contract personnel enjoy and what their rights and duties are.

It appears that what is needed is an in-depth analysis and also a forecast of the employment situation for the able-bodied population in the regions, above all at the sites of enterprises of the military-industrial complex where specialists work whom the Navy needs. This will make it possible to concentrate efforts in those areas where it will really be possible to supplement the number of contract personnel who are already prepared for service.

[Veledyev] It would seem that the matter is clear for those who have a specialty that the Navy needs and for those who want to become military professionals. But let us suppose that I worked all of my life in agriculture, say, and that I want to serve on a ship. In such a case do I have a possibility of signing a contract?

[Mazin] Certainly. And after it is signed, in training subunits you may undergo the appropriate education and training for the specialty that you have chosen and that is needed by the Navy. Although frankly the military-technical and educational base of these subunits and the very system of training there will require a certain amount of reorganization.

[Veledyev] Nikolay Ivanovich, you mentioned contract advertising, without which one certainly cannot get along today. But what is being done in this direction in the Navy?

[Mazin] I can present several examples. At the officers' home of the Petropavlovsk-Kamchatka Fleet, there is a special consultation center in operation for those wishing to serve under contract. The staff of the Northern Fleet issued a series of posters for the purpose of propagandizing contract service. In a number of Navy publications, regional newspapers, and oblast television studios, they have organized a cycle of articles and broadcasts on this subject. Murmansk television twice carried out "round tables" on the problems of contract service. Participating in them were admirals and officers of the staff of the Northern Fleet and oblast military commissariat and petty officers and seamen who have decided to continue their service as professionals.

All of this work must be performed more energetically and creatively, however, both directly in the units and on the ships as well as in civilian organizations and at the place of residence of petty officers and seamen in the reserves.

[Veledyev] And what, in your view, must be done above all to make the recruitment of contract personnel effective?

[Mazin] It is essential to work out a mechanism for the realization of a package of military laws. One hears the opinion that these laws, in a manner of speaking, are prospective legal acts that will take full effect only after the conclusion of the planned reduction of the armed forces and improvement of the economy.... That may be the prospect but it is necessary to make up the crews and units every spring and fall. Therefore, in my view, it is also necessary to react more flexibly to inflationary processes in the Russian economy. After all, what is still considered to be a decent wage today will not tempt many people tomorrow....

But whatever opinions are heard, I am certain that contract service is already the present in the manning of the Navy. And one must not fail to consider this.

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Ship Maintenance According to Actual Status

94UM0116B Moscow MORSKOY SBOU IK in Russian No 9, Sep 93 (Signed to press 7 Sep 93) pp 61-62

[Article by M. Barskov and Yu. Myasnikov: "On the Problem of Converting the Navy to Maintenance in Accordance with Its Actual Technical Status"]

[Text] The system for the technical maintenance and repair of ships (STOR) has an complex operational and technical structure that depends on a number of internal and external factors. In addition, it is interrelated with other systems for administration, data base organization and management, material-technical support, etc., as a result of which its improvement is a complex task.

The different kinds of technical servicing and maintenance (TO)—regulated, by calendar, by accrued mileage, periodic and nonperiodic, planned and unplanned, and others—that have developed by this time are specified by the documents (in particular GOST 18322-78) and are realized in the STOR for the equipment of ships. The kind of TO is determined by one of the characteristics: Periodicity (in time), volume of work, its regulation, etc. (GOST 18322-78). At the present time, the Navy applies a planned-preventive STOR and primarily in accordance with accrued mileage. Theoretically, this system has been worked out in detail but since the maintenance practices are designated for uniform and structural technical means under prior information about their operating reliability without taking into account their real technical status, this direction leads to large temporal and economic losses. In addition, the existing level of technical equipment of the Navy and limitations in the reserves of material and manpower make it practically impossible to fulfill the designated volume of TO.

This is why today the trend in the technical maintenance of machinery is aimed at maintenance in accordance with status. This is the most progressive strategy with a maximum savings of resources. Thus, according to the production association "Northern Machine Building Enterprise," the conversion to STOR in accordance with the actual technical status reduces the labor intensiveness of the maintenance and repair of the equipment of ship propulsion plants by 30-40 percent and increases the coefficient of operational intensity by 12-15 percent.

At the same time, the realization of the strategy of the conversion to STOR in accordance with status is primarily linked with the introduction of methods and means of technical diagnostics into the practice of the technical maintenance of ships.

Work on the diagnostic support of the ships of the Navy has been performed since 1981 under the program "Diagnosis-2." A distinguishing feature of the program is the circumstance that it is oriented toward new designing and provides for the establishment of an on-board diagnostic system as part of a complex system for the control of the technical means of the ship. The "Diagnosis-2" program essentially does not consider the requirements of ships under construction and at sea.

In addition, the cutting back of new designing and construction of ships in recent years has had a painful effect above all on the theme of diagnostics and at the present time only some of the themes of the very extensive program are being financed with great difficulty.

Taking these circumstances into account, scientific research work got under way in 1991 that also provided for the investigation of the possibility of establishing a mobile diagnostic complex.

The impressive series of models and experimental prototypes of portable instruments of foreign and domestic production utilizing physical methods of diagnosis makes it possible to determine directly or indirectly the most important parameters of the technical status of the ship's power mechanical equipment (see table) during the course of a diagnostic investigation. The experience in the use of universal portable instruments on ships of the sea and river fleets confirmed the forecast technical-economic effect with respect to the reduction of the use of fuel and spare parts and also the labor intensiveness of repair and preventive measures. It also made it possible for several civilian shipping companies to convert to the maintenance of equipment in accordance with its actual status. All of this points to the correctness of the chosen direction, but this same experience has shown that the effectiveness of the use of portable instruments substantially depends on their comprehensive employment. Consequently, if we want to increase the probability of a correct diagnosis, they must be brought together in an information and measurement complex, whose input data are provided by individual diagnostic instruments, whereas the processing and submitting of information, its correlation, and the establishment of data banks is entrusted to computers.

The resolution of the question of the location of the information and measurement complex will apparently depend on the type and purpose of the ship, the degree of its automation, the existence of sufficiently powerful computing systems, the possibility of technical servicing directly on board the ship, and other factors. But even today the priority must be given to a mobile diagnostic complex (laboratory), in the arsenal of which it is planned to include a set of the appropriate universal instruments and information and measurement complexes. This does not mean that no diagnostic instruments will be on board the ship. Their presence will be determined primarily by the necessity of the systematic collection of information during the voyage and for the subsequent forecasting of the technical status of the equipment.

The design of the described model of a mobile diagnostic complex (PDK) provides for the normal work of the servicing personnel, on the one hand, and for the maintenance of the diagnostic systems in working condition and in a trouble-free state during transportation to the place of use, on the other hand.

What problems arise in connection with the establishment of such complexes? They can be divided into two basic groups: Research problems and organizational-technical problems. In the first, we include the development of the structure and make-up of the PDK for different ships and also its base units, the selection of the criteria and substantiation of the list of equipment for the necessary qualities of its diagnosis with the help of on-board and base units of PDK, the establishment of PDK software, data bases of a special expert's system (ES) for the information-measurement complex (ES helps the operator when information is lacking), and algorithms for the diagnosis of standard equipment, including the resolution of the problem of extreme (threshold) values of the diagnostic parameters.

The organizational-technical problems, in turn, include: The determination of the place of PDK in the existing system for the technical servicing of ships; the development of a set of tasks and a statute on base and on-board services for technical diagnosis; documents regulating the interaction of these services and proposals on the documentary tracking of the process of the conversion of the fleets to maintenance in accordance with the actual technical status; and the development of proposals on the forms and methods of the provision of diagnostic information and exchange with the higher system.

The research work that, to a significant extent, answers the questions that have been raised is now ending. The developers are prepared to begin the experimental design phase of the work and the manufacture of a set of PDK.

In conclusion, let us note that in 1988 the expenditures of the U.S. Department of Defense for the development and procurement of diagnostic equipment amounted to

about \$2.5 billion, and these expenditures were made under severe financial restrictions by Congress. In the opinion of American military specialists, the U.S. Department of Defense will strive to increase these appropriations in the next 5-10 years, justifiably counting on their rapid pay-back and the maintenance of the operational readiness of military hardware at the necessary level.

System, Instrument	Area of Application	Stage of Development
Diagnostic expert's system on the basis of PEVM [expansions not given] and a standard system for centralized control	GEU of ships and vessels: nuclear and thermal electric power plants and other complex energy systems	Experimental design work
AE-instrument "Search-IB"	Assessment of the hermetic nature of fittings, piping, and TOA capacities and registration of leaks of fluids and gases	Series production
Leak detectors ITU/P-2 and IKU-1	Identification of leaks in pipes and fittings	Experimental design work, series
Indicator of the status of antifriction bearings ISP-1 and PDPK	Technical status of pumps and electric motors	Experimental design work, series
Recorder of parameters of digital and portable "RTs"	Collection of information from the diagnostic facility	Experimental design work
Infrared imager	Losses of heat, status of the lining of smokestacks, status of heat-supply systems and electric shields	Experimental batch
Analyzers of combustion processes	Work of boilers, reduction of the use of fuel and harmful impurities	Experimental design work
Instrument for diagnosis of electric machines and "DEM"	Assessment of the status of the windings of electric motors and generators	Series
Thickness gauge UT-93P	Assessment of the status of pipe walls	Series
Noncontact temperature gauge "Smotrich-M6P"	Diagnosis of electric switching equipment	Series
X-ray analysis of the lubricating oil "Bars-3"	Diagnosis and forecasting of the status of friction assemblies	Experimental design work
Mobile diagnostic complex	Complex of systems and methods of technical diagnosis for the diagnostic servicing of technical systems of ships	Research and experimental design work beginning in 1993.

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Plan 877-EKM 'Kilo' Offered for Export

94UM0116C Moscow *MORSKOY SBORNIK*
in Russian No 9, Sep 93 (Signed to press 7 Sep 93) p 67

[Unattributed article under "Russian Naval Exports"
rubric: "Submarine of Plan 877-EKM"]

[Text] The GED [General Export for Defense] in "Oboronoeksport" presents the submarine of the Plan 877-EKM ("Kilo" Class), which is already finished production. Such submarines are built in series and are intended for combat operations in offshore and oceanic regions.

Structurally this submarine is double-hulled. Its solid hull divided by cross bulkheads into six compartments is designed for a diving depth of 250 meters. The light hull, whose shape was selected as a result of comprehensive calculations and model tests on stands and in experimental basins, has a maximum length of 72.6 meters and a width of 9.9 meters. The width along the horizontal stabilizers is 12.8 meters. The surface displacement is 2,300 cubic meters, the draft is 6.2 meters, and the full submerged displacement is 3,036 cubic meters.

The submarine is equipped with a single-shaft diesel-electric propulsion plant working under the scheme of full electric motion, which gives it an adequately low level of noise. The propulsion plant includes two diesel generators each with a capacity of 1,000 kilowatts used for movement in the surface position, one electric motor with a capacity of 4,050 kilowatts for cruising under water and on the surface, a storage battery, a reserve propeller complex, and a post for the control of the electric equipment and propulsion plant. The latter provides for a submarine cruising speed of up to 10 knots in the surface position and up to 17 knots underwater at full speed; the economic speed is 3 knots. The range under RIDP (a system for the work of the diesel generators under water analogous to the foreign "snorkel") is 6,000 miles at a cruising speed of 8 knots. The provisions and drinking water on board make possible endurance of up to 45 days.

The basic armament of the submarine of Plan 877-EKM is torpedoes (ready inventory 18 torpedoes) and mines (24), which can be taken instead of part of the torpedoes. The submarine is equipped with six torpedo tubes (for the firing of torpedoes and the placement of mines), racks for spare torpedoes and mines, and a device for their rapid loading into the tubes. A multipurpose combat information and control system is set up on board for the operational command of the submarine by the commander and for the firing of the torpedoes. All systems for the control of the armament and navigation of the ship are located in the main command station and are isolated from other service compartments for the purpose of establishing special conditions for the commander and for the command and control of the submarine.

The possibility of obtaining the necessary volume of information and the arrangement of the posts and operations rooms, complexes, systems, and means for the control of the ship in combination with the comfortable accommodation of the personnel guarantee a highly effective functioning of the "crew-ship" system.

At the same time, the designers of the Central Design Bureau MT [expansion not given] "Rubin" (St. Petersburg) who created this Plan and the specialists of the production association "Krasnoye Sormovo Plant" (Nizhny Novgorod) who build such ships have new ideas in reserve and are continuously working to improve the design of the ship.

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REAR SERVICES, SUPPORT ISSUES

Military Courts Chief Muranov Interviewed

94UM0118A Moscow *KRASNAYA ZVEZDA* in Russian
8 Dec 93 pp 1-2

[Interview with Colonel-General of Justice Anatoliy Ivanovich Muranov, deputy Minister of Justice of the Russian Federation, and chief, Military Courts Directorate, by KRASNAYA ZVEZDA correspondent Lieutenant Colonel Ivan Ivanyuk on 8 Dec; place not given: "Courts Attract Truth-Seeking Persons"]

[Text]

Biographic Sketch: Colonel General of Justice Anatoliy Ivanovich Muranov

He was born in 1942 in Ryazan Oblast; graduated from the Moscow Higher Combined-Arms Command School and the Law Department of the VPA [Military Political Academy] imeni V. I. Lenin; served in a motorized rifle large unit and was a member of the military tribunal of the Omsk garrison and the Transbaykal Military District; occupied the positions of military tribunal deputy chairman of the MVO [Moscow Military District] and chief of the Military Tribunals Directorate.

By Russian Federation Presidential Order, in May of 1992 Colonel General Muranov was appointed Russian Federation deputy minister of justice and chief of the Ministry of Justice Military Courts Directorate.

[Ivanyuk] Anatoliy Ivanovich, how would you rate the progress of legal reform in Russia? At what phase do we now stand?

[Muranov] It is a fact that we have a state program dealing with that area. This phase is particularly critical, in that it involves adoption of the new Constitution. Indeed, it is the fundamental law that establishes the most important legal statutes, a definite hierarchy of legislative acts, and the procedures for passing them into law. In this regard, I wish to stress that legal reform, including judicial reform, is moving forward in the

country. In particular, we have passed the "Law on Status of Judges in the Russian Federation", which has noticeably effected an improvement in prestige of juridical activity. The draft "Law on Military Courts" was examined in the first reading, although it did not pass for purely technical reasons. This is all the more disappointing, since it had been worked out to the last detail, and, to tell the truth, we were expecting to have the piece of legislation in effect by the 75th anniversary of the military courts, which we are celebrating today.

[Ivanyuk] Please tell us why today is the day that military courts are celebrating their professional holiday.

[Muranov] It was exactly 75 years ago, in December of 1918, that the republic *Revvoyentribunal* [Revolutionary Military Tribunal] was formed; it took up its first case on 8 December. Judicial activities did take place directly in units before that date and after the revolution, but they were randomly organized and were guided by orders issued by commanders and chiefs, which was also true for the court makeup. In essence, that was also the day of institution of the military justice system, the elements of which had been set down long before by Peter I; the system was abolished in October of 1917. But it was just recently, in April of 1992, that the previous name, military courts, was bestowed. It may be said that this took place within the framework of legal reform, the starting point of today's discussion.

[Ivanyuk] But the Law on Military Courts was not passed, and it appears as if it will not be passed in the near future. Thus, military judges will not be offered any relief from their problems.

[Muranov] Not all the bills drawn up by the former Supreme Soviet are equal in value, of course. But it would be wrong to reject them, and the Federal Assembly will take up most of them after the elections. However, we must be realistic: There will be more pressing issues on the agenda.

As far as our problems are concerned, they of course are also quite pressing, and we will attempt to find approaches so that we can resolve them readily. To fill the resulting legal vacuum, we have drawn up a draft Russian presidential edict that could settle certain issues relating to military courts activities during the period of phased constitutional reform.

The military justice setup is small, and it has many peculiarities. At the present time, on Russian soil and in groups of forces there are in operation 157 military courts, in which 550 judges preside and 56 commissioned secretaries are assigned. The personnel shortage amounts to 25 percent; we simply cannot stop the "drain" of our cadres to commercial structures. And the present situation is made all the more intolerable by the fact that almost a third of military judges have no authority. Thus, all of the 30 persons graduating this year from the Military Academy of Economics, Finance, and Law have been given assignments but no authority to examine cases, since they were not granted the judge

designation. In addition, there presently is no agency that could legitimately select and assign persons as judges. Also, there are judges whose authority has been withdrawn, which means that they can no longer engage in juridical activity.

Furthermore, in the draft version of the new Constitution which has been offered as a referendum there is a provision which if passed would literally paralyze the work of military courts. It would require that a judgeship be awarded to a person who is at least 25 years old, possesses a military education, and has 5 years of legal experience. The latter condition cannot possibly be satisfied in our system. The sole specialized group training military judges accepts officers who have completed 3 years of service. In addition, we select officers from troop personnel who have graduated from civilian higher schools of law. Where are they to acquire 5 years of experience in the legal profession?

Indeed, to tell the truth, I fail to understand why the fundamental law includes this kind of requirement. These issues can and should be settled in other normative acts, and issues which may not be solvable in the given situation should be removed.

[Ivanyuk] Anatoliy Ivanovich, how do you rate the prospects of introducing the jury system into Russia?

[Muranov] Well, the decision has already been made. The first jury trial will be held in Saratov on 15 December. We will be able to judge the effectiveness of the new system—or I should say the well-buried old system—only on the basis of practice. However, even now it is possible to say that introduction will encounter quite a number of difficulties. First, there is a very serious problem of housing the court sessions, all the more of this kind. Second, there is the problem of finding 12 jurors and two people's assessors, since there is a growing number of employers who are not interested in releasing their workers for a month of jury duty. The same problem of cadre shortage will plague the military unit commander. Most of all, however, this phase of legal reform requires large financial expenditures. That is why the decision has been made, for the present, to introduce the jury system not throughout Russia, but rather in only nine oblasts.

[Ivanyuk] Therefore, it would appear that the court's authority depends largely on the material capabilities of the state.

[Muranov] Yes, this in the main is the case. One may declare that the judicial system stands at the pinnacle of the entire law enforcement system, but if a person enters a courtroom housed in a barrack in a poor state of repair or in some kind of basement, his ideas of a majestic and unassailable goddess Themis [Greek goddess of justice] wearing a blindfold and holding weights will suffer a blow. The situation of many military courts in this regard is deplorable. For example, in Rostov-on-Don a judge, a secretary, and all the support services are located in a single small room. In Komsomolsk-on-Amur, the

military court holds sessions in a wooden structure that is so ancient that it sways somewhat in the wind. It was only recently that the Moscow Military District decided to make money available for repairing the military court building—erected as long ago as 1813—which has fallen into decay. This is the place where Leo Tolstoy, attending sessions, gathered material for the novel "Resurrection." This was an opportunity to not only render the historic building suitable for the work of military judges, but also preserve it for our descendants. The commander of the Ural Military District allotted 10 million rubles for repair of military courts buildings. There are other examples. The only question remaining is when the decisions will become a reality.

[Ivanyuk] Problems of material support for courts and for judges proper are undoubtedly of great importance, but your work is most likely beset by many other factors, such as the need to send justice to the "hot spots."

[Muranov] Yes, the difficulties prevalent there are being exacerbated a great deal. There are incidents of assaults on judges and on military courts. Witnesses and victims do not appear in court, and there is a multitude of problems associated with delivering criminals. I shall cite only one example. Presently being held in pre-trial confinement in Baku is Senior Lieutenant A. Igolnikov, who is charged with premeditated murder under aggravating circumstances and with position-related crimes. He has been in confinement for more than a year. Since there are no suitable interstate agreements between Russia and Azerbaijan, in all this time there has been no way to deliver him to Russia to undergo a final determination.

[Ivanyuk] Anatoliy Ivanovich, you may not agree with me, but it seems to me that the proliferation of crime is rubbing out the concept of mandatory punishment in the public's mind.

[Muranov] I believe that this is where we have fallen short by not providing sufficient publicity on our work. It should be realized that the military courts—as I have been saying—even in their weakened state have examined about 9,000 criminal cases and 550 civil cases in only 9 months of this year, and that is not counting complaints, mediations, and appeals. In accordance with a directive issued this year by a deputy defense minister, we are working to improve the organization of judicial processes taking place in military units in the presence of the personnel, something which is of enormous educational significance.

[Ivanyuk] But crimes are being committed not only by enlisted conscripts but by officials as well, by those holding high positions. This kind of case may be rare, but each such occurrence becomes beset by rumors and conjecture. Some people form the impression that some persons get away with it.

[Muranov] Once again, this is all a matter of openness, and this depends to a great extent on you, journalists, as well. Why, one need look no further than yesterday's

KRASNAYA ZVEZDA's running the story on the trial of Colonel V. Burinkov, a former personnel agency worker, who took advantage of his position to engage in bribery. This reporting will have a role to play, of course, including in putting an end to all kinds of conjecture and rumors.

I would also like to point out that the position a person holds does not by itself offer immunity from responsibility under the law. For example, the Military Collegium of the Russian Federation Supreme Court has before it the case of Lieutenant General Yu. Aleksandrov, former PVO [air defense] army commander and of Major General V. Makanda, his rear services deputy, who are charged with grand theft and other position-related crimes. Also standing accused in this matter are eight other persons.

[Ivanyuk] What do you think about the death penalty? Have military courts resorted to applying capital punishment in the recent past?

[Muranov] I believe that in a civilized state, where laws are in force, where law-abiding citizens live, this kind of measure should be eliminated. It is unnatural. A human life is something of the highest value and should not be terminated artificially. However, at the present time in our country we cannot eliminate it, if a criminal acts on the edge of that which the mind can accept. For example, military builder V. Esterle stabbed a woman 26 times after breaking into her home with the purpose of burglary. What is that if not barbarity? Previous to that incident, he had a record of criminal assault and other crimes. The military court of the Strategic Rocket Troops sentenced him to capital punishment. There was a total of six sentences of this kind handed down this year, seven last year.

[Ivanyuk] Anatoliy Ivanovich, is there something you may wish to single out from the work of military courts on this holiday for members of the judicial elite?

[Muranov] Judicial work requires not only outstanding qualifications and erudition, but also high moral qualities. I derive much pleasure from noting that we have many persons of the highest culture who approach their labor responsibly and creatively, acting according to the dictates of duty and conscience.

The idea has somehow formed that the military court is largely a punitive agency. It should be realized that the court has at all times attracted persons who pursue the truth and justice. Our work has also lately become increasingly involved with protecting the legal interests of servicemen, who have been granted the right to appeal to a court in case of illegal actions on the part of officials and agencies of a military directorate. In nine months of this year, we have accumulated 549 complaints of this sort in our docket. Included here are illegal discharge into the reserve, unjustified transfer to another duty station, and baseless charges of material responsibility. In reality, there were at least 10 times as many appeals made, but most of them were settled during the pre-trial

investigation. We note that the level of responsibility of commanders in this regard has risen remarkably; in units of the Military Space Forces, military judges have not had to deal with a single violation committed by officials.

That is why I am singling out this aspect of our work; also because this constitutes the "building blocks" which go to make up a law-governed state. Reform of the law enforcement system—the introduction to today's discussion—is very important, but it is also necessary for a change to take place in the consciousness of people, in the attitude they hold toward the law. Otherwise, we cannot in due manner build a democratic society.

Transbaykal MD: Cost Restraints vs Automation of C2

94UM0126A Moscow KRSNAYA ZVEZDA in Russian 14 Dec 93 p 2

[Article by Aleksandr Davidyuk: "Pharmacy in the Computer Room, As Transbaykal Military District Programmers Leave for Commercial Businesses"]

[Text] In an article entitled "Are We Going to Haul Potatoes on the 'Buran'?", in KRSNAYA ZVEZDA on 2 June of this year, our newspaper raised the problem of introducing computers in military units. Six months have passed, but the situation, unfortunately, has gotten even worse. Why?

"The problem," said Lieutenant Colonel Sergey Korobov, chief of the Automation Group of the Transbaykal Military District Organization/Mobilization Directorate, "is that the newly confirmed tables of organization essentially put an end to the further development of automated control systems. This is definitely the case where our organization and mobilization administration is concerned."

As if in confirmation of his statement, some officers came into the spacious computer room in which we were speaking and efficiently began taking measurements of the room, citing an order from above. They said they were looking for appropriate quarters for a pharmacy. In response to the question as to where the computers would then go, they said bluntly that the automation department no longer existed, that there was only an automation group now. So it would have to make do with less space.

Lt. Col. Korobov is no longer bothered by such "trifles." He has another headache: How to ensure the normal functioning of the sizable computer inventory. Until recently, the organization and mobilization administration had an establishment automation department, but no longer. Maybe the department really isn't needed? But it is. It has unique software that is not to be found in any other district (in the view of Moscow specialists). During the Vostok-93 exercises, for example, the software received high marks. To monitor the demobilization of the district's troops, the computer network linked

two republic military commissariats (Buryatia and Yakutia), oblast commissariats (Chita and Irkutsk), and various city commissariats, as well as corps staffs. The system made it possible to rather effectively monitor the demobilization of the district's troops, reduced the time needed to process the obtained data by a factor of 10 to 12, and enhanced the reliability and accuracy of all calculations.

Needless to say, the single computer network was not created overnight. Some very intelligent enthusiast officers—such as Colonel Sergey Yakovlev, Colonel Yevgeniy Kupriyanov, Lieutenant Colonel Sergey Korobov, and Major Aleksandr Krasavin—spent more than two years traveling throughout Russia and the ex-Soviet republics in search of computer equipment and knocking on the doors of academies, military research institutions, defense enterprises in an effort to obtain software. And they themselves worked hard to write programs as well. At the time, the operations administration and the organization and mobilization directorate even offered computer literacy classes of sorts, where very experienced colonels and young captains mastered the fundamentals of this science and improved their knowledge and skills in working with computers.

There were problems too, of course. Take financing: The district receives no money to buy computer equipment. And so each chief gets by as best he can. Nevertheless, they gradually managed to provide new equipment to units, military commissariats, and even certain local government agencies. But the lack of a standard policy in this field resulted in a rather motley collection of computer equipment.

But the situation has begun to change of late, and unfortunately not for the better. First the financial officers were strictly forbidden to appropriate money to buy computers and repair equipment. Then the centralized furnishing of computers was halted almost completely. Software was another matter entirely: The national research institutes are asking astronomical prices for it.

Will the staff department be able to cope with all these difficulties? Its chief, Colonel Yevgeniy Kupriyanov, thinks that the new tables of establishment have not been fine-tuned and fail to take into account the actual situation in military units: "I spoke with a representative of the Ground Forces High Command who is familiar with the problem. He shares my viewpoint. Reorganization is essential, but it should not be done this way. After all, there are barely enough people to cope with the district staff's workload. They have no time to work with the various administrations and services."

How can this problem be solved? People working in the field propose a return to the original arrangement: That departments consisting of five officers be introduced in the tables of organization of the leading administrations. A proposal to this effect has been sent to Moscow, signed by the district chief of staff. He proposes that the district

troop commander have a special budget item under which he can buy computers independently, based on the region's individual needs and the availability of computers in the units.

This would probably make it possible to solve the software problem, which is currently one of the most urgent. And at the same time, perhaps, it would allow a salary raise for programmers, a category of employees who are increasingly leaving for commercial structures.

The people committed to improved performance in the Transbaykal Military District will no doubt find a way to maintain their unique computer network. The question is, will they again have to make heroic efforts and bend over backwards to do so, instead of being able to go about this normally?

Impact Of Crime On Military

94UM0126B Moscow KRASNAYA ZVEZDA
in Russian 14 Dec 93 p 2

[Letter from retired officers representing group of veterans: "Thug Pulls Out a Revolver? Point Your Finger at Him"]

[Text] What can be done—people are robbing and killing. Armed attacks are on the rise, especially on motorists, dacha owners, private farmers, and entrepreneurs, and even hired killers have appeared.

Servicemen and Armed Forces veterans are increasingly falling victim to armed crimes. Unfortunately, this list includes some people we know and love: When armed robbers attempted to steal his car, Colonel A. Nosach was killed and reserve Colonel V. Nikolayev and Major V. Valiyev were brutally beaten and maimed.

In our opinion, the weapons law adopted in May of this year could, to a certain extent, curb crime and help

individual citizens effectively confront armed robbers and hooligans—but only on the condition that the law is properly developed and amended.

Society currently has a large contingent of citizens whom it has entrusted with combat weapons for many years, namely servicemen and persons discharged from military service. The overwhelming majority of these people are decisive individuals with flawless records and professional military experience. But the system effectively condemns even them to an unequal confrontation with armed criminals in that it denies them the right to armed self defense.

We think that servicemen and army veterans should be allowed to obtain military or service weapons as well as smooth-bore or small-caliber short-range weapons and gas or other stun weapons without permits (perhaps on a temporary basis, for a moderate fee paid to Ministry of Defense and Ministry of Internal Affairs agencies), provided they have valid cause. This should be on the basis of a simplified procedure and for the purpose of self-defense in their homes or automobiles. Where officers are concerned, bureaucratic procedure that entails such far-fetched requirements as paying for instruction courses, passing tests, and presenting a number of authorizations are degrading and unnecessary.

In our opinion, such measures will make it possible to reduce the number of crime victims among servicemen and other categories of citizens, curb the growth of crime, ease the work of the police, promote an attitude of public intolerance toward criminal acts, and enhance the prestige of the Army and military service. In the meantime, about the only thing you can do is this: If a thug pulls out a revolver, point your finger at him; maybe he'll leave you alone.

[Signed] Colonel Pyotr Kolodyazhnyy, Retired; Colonel Semyon Selskiy, Retired; and Colonel Rostislav Oktyabrskiy, Retired, on behalf of a group of 22 Armed Forces veterans.

UKRAINE

Work of State Guard Administration Detailed

AU2311115493 Kiev URYADOVYY KURYER
in Ukrainian 20 Nov 93 p 6

[Interview with Major General Mukhaylo Petrovych Hayduk, chief of Ukraine's State Guard Administration, by URYADOVYY KURYER correspondent Oleh Oliynyk; place and date not given: "Officers of the State Guard Administration Are Always Nearby or Wherever Necessary"]

[Excerpts] Unfortunately, terrorism fills a conspicuous page in the history of mankind. The temptation to change the course of social development or to resolve a political collision with one shot or a stab with a dagger has existed since times immemorial. Even now such actions are resorted to everywhere in the world. A person who has risen above the others is such a convenient target. That is why there exists such a profession as bodyguard.

URYADOVYY KURYER correspondent Oleh Oliynyk met with the chief of Ukraine's State Guard Administration, Major General Mykhaylo Hayduk.

[Oliynyk] Mykhaylo Petrovych, it is clear that the leaders of our country, like their foreign colleagues, are provided with guards. This service is quite specific, but let us lift the veil of secrecy slightly.

[Hayduk] Rather unfortunately, reports on the escalation of violence—the taking of hostages, fratricidal wars, and attempts on the lives of state and political figures—increasingly disrupt the normal course of our lives. Over recent years, Indira and Rajiv Gandhi, Sadat, and Palme have been assassinated and attempts have been made upon the lives of Reagan, Schultz, Bhutto, Lafontaine, Mitterrand, and others.

It is easy to conclude that, in any state and especially when we are dealing with the development of independent Ukraine, it is important to ensure the normal functioning of administrative bodies and the security of the country's leaders and government. For this purpose, on 15 January 1992, the State Guard Administration was created, directly subordinate to the Ukrainian president. The Administration's task is to ensure the security of the Ukrainian president, the Supreme Council Chairman, and the republic's prime minister, as well as visiting heads of state and government of foreign countries. It is also in charge of guarding government buildings, residences, and other facilities.

In our activity, we are guided by the Ukrainian Constitution, laws dealing with the military sphere and security, the corresponding international legal acts, and directives issued by the Ukrainian president.

[Oliynyk] At present, not a single major world politician leaves Ukraine outside the sphere of his attention. Tell me, under what conditions do you have to work?

[Hayduk] As Ukraine has acquired increasing significance and international prestige as a great European power, the number of visits by heads of state and government of many countries has increased. This, in addition to the fulfillment of our direct tasks, gives rise to additional duties and responsibilities for the officers of the Administration. In 1992 alone, 334 guarding measures were undertaken. Naturally, this concerns all law enforcement and other related agencies to full measure.

[Oliynyk] Mykhaylo Petrovych, could you specify what the officers of the law enforcement agencies have to do on the eve of and during visits by high-level foreign delegations?

[Hayduk] I may not be unique in referring you to the international experience of various special security or guarding services. Every special service has its own secrets.

On the eve of the visit, we, jointly with our foreign colleagues, must take into account all the minutest details, from the arrival of the aircraft at the airport to its departure from the Kiev zone. This is preceded by studying the routes, inspecting the locations of visits, and devising what action to be taken in particular situations.

The enhanced vigilance on the part of the officers with regard to access to buildings being guarded or to temporarily guarded zones makes it possible to guarantee the safety of the measures being undertaken. However, it follows from practical experience that, in many cases, the persons present during particular events take along objects that cannot be considered harmless. For example, during an inspection of a foreign delegation that arrived at Boryspil Airport and also during an examination at the entrance to Babiy Yar [a location of a massacre of Jews in Kiev], more than two dozen knives, home-made cutting weapons, nerve gas canisters, and several cartridges for rifled weapons were found.

Nobody insists that these objects were intended for criminal purposes, but the guards must be ready for all eventualities and possible negative situations and must rule out even a negligible chance of risk.

[Passage omitted on experience of non-Ukrainian services]

[Oliynyk] Does the Administration work on its own, and with whom does it cooperate?

[Hayduk] Of course, we do not work entirely on our own. For example, one of the trends in the Ukraine Guard Service's diverse activities is the prevention and eradication of terrorism. It deals with particularly dangerous crimes against the state. Even though, today, Ukraine's Guard Service is outside the structure of Ukraine's Security Service; we cannot avoid cooperation on these issues. The protection of public order, provision of safe transportation, and regulation of movement are within

the jurisdiction of the Ministry of Internal Affairs, whereas the Ministries of Defense and of Foreign Affairs, as well of Civil Aviation, supervise their own tasks. Nor can we do without the assistance of medical workers. Our task (certainly, only within the limits of our jurisdiction) is to unite the efforts of the representatives of all these services.

[Passage omitted on preferred qualities of officers employed by the service]

[Oliynyk] Professionals are currently sought everywhere. Skilled specialists, especially in such a specific sphere as the institution of bodyguards, are in considerable demand. Do you have to deal with the problem of resignations?

[Hayduk] There are enough people willing to work for us. However, that is life, and it happens that some of our officers may be attracted by the higher salaries promised to them by commercial structures and may decide to work for them. This is, certainly, a different level of social status. When I learned that one of our former colleagues and somebody's bodyguard was seriously injured in a settling of accounts among new businessmen, I could only sympathize with him.

[Oliynyk] In addition to preparing official visits, are you also in touch with representatives of the security services of other countries?

[Hayduk] A few days ago we held a meeting with representatives of the U.S. special services and discussed with them questions of combating international terrorism and ensuring reliable security for leaders of our countries. We have much in common in approaches toward resolving these problems. In the process of exchanging experience, practical training was conducted on the use of firearms and the physical and psychological training of guards. The other day, there was a conference seminar in Hungary, and we were invited there along with representatives of the corresponding services from 32 countries (Ukraine and Russia represented the CIS).

[Oliynyk] Is it true that during the recent meeting between Kravchuk and Yeltsin, only the Russian special services guarded the presidents?

[Hayduk] No, it is not true. The host side always takes upon itself the responsibility of guarding leaders of particular countries. In such measures, territorial security services and the militia are actively involved. In the Crimea, individual border guard subunits and other bodies were also used. You understand that nobody can bring such numbers of people from another country. That is why the Crimean meeting of the Ukrainian and Russian presidents was protected by the Ukrainian services, though certainly in cooperation with the personal service of the Russian president. On these questions, we had no misunderstandings. It was highly professional and friendly work on both sides.

[Oliynyk] It happens that our president and the premier fly in the same aircraft. Does not this reduce the level of state security?

[Hayduk] This may be the case, in special cases, when it is necessary to adopt quick decisions important for Ukraine. In such cases, the Administration, in cooperation with other departments and services, takes all possible measures for a reliable protection of the flights of aircraft carrying such persons being guarded.

[Passage omitted on the positive and negative role of journalists covering official meetings]

[Oliynyk] What technical means do you use in your work? Are all of them foreign-made?

[Hayduk] Specialists of the Administration use a wide range of devices and special equipment that were earlier manufactured at so-called "post-office boxes" [classified installations] of the former USSR. Many of them could easily compete with the best Western models. However, time flies, and we gradually replace them with new and more advanced equipment. At present, we have both Ukrainian and foreign technical means for detecting explosive devices and weapons. We are also developing an up-to-date system of communications with wide possibilities. However, you understand perfectly well that orientation toward foreign technology requires hard-currency resources.

[Passage omitted quoting examples from past activities of the service]

BALTIC STATES

Finnish View of Estonian Military Developments

944K0341A Helsinki HUFVUDSTADSBLADET
in Swedish 4 Nov 93 p 8

[Article by Erik Appel: "Estonian Military in Children's Shoes"]

[Excerpts] The Estonian military is marching in children's shoes. The shortages are great and numerous, but it must make use of the time offered by the dissolution of the Soviet Union to build up a military threshold that will make a prospective aggressor stop and think. [passage omitted]

But the human resources are good—although the state of their health is a notch lower than here at home. They are extremely enthusiastic about learning to defend their country.

This was stated by former cadet school chief Colonel Matti Lukkari, who has been a military adviser to our southern neighbors for half a year, to attentive members of the IR 61 Infantry Regiment on Marttinen Evening at the Technical Association in Helsinki.

Ten Years

Lukkari estimates that at the present rate it will take about 10 years before Estonia has a credible defense that will make a prospective attacker stop and think before crossing the "threshold."

Estonia must utilize the time offered by the chaos that has followed the dissolution of the Soviet Union.

Five Armies

The situation has also be confusing on the Estonian side. It could be said that there have been no fewer than five armies there. The Russian Army once had over 120,000 men, but is now a greatly demoralized force of about 4,000 men. The so-called Intermovement had its own militia equipped with Russian weapons. It was this group that forced its way into Toompoa and cut off government buildings but then it, in turn, was isolated by tens of thousands of civilians who came out following a dramatic radio speech to the people by Edgar Savisaar.

At the same time this happened, a militia captain stood up on a bench and asked everyone who was interested to form a home guard, the Kodukaitse, which later became the frontier guard. The old defense corps called Kaitseliit was resurrected and when its chief left it, he formed the controversial Pullapaa Company, in something of an outright revolt.

Colonel Lukkari took aim at this company, calling its men the "worst soldiers in the world," long-haired, undisciplined, some with ponytails, rings in their ears, and rap sheets.

Inductees or Professional Army?

And last but not least there is the country's own military, founded on 3 September 1991. It is this military that Colonel Lukkari and two other Finnish officers are trying to whip into shape, and this is not the easiest task in the world. Sometimes it seems hopeless. He could have chosen quieter pursuits in his retirement years with golf and such, but then there will be a breakthrough and it all seems meaningful once again.

Originally there were seven Finns, but the arms deals with the Israelis put such a large hole in the budget that the others had to go.

"At 1,000 markkas a month we were obviously too expensive. The arms deals were made by the politicians, bypassing the military. The agent got rich on the deal, but it is doubtful that the deal was successful from the military point of view. Now the Russian Kalashnikov is being replaced by the U.S. assault rifle, which is not fully suited to Estonian conditions," Lukkari said.

"A small country with a small army should take its weapons from its prospective enemy."

One serious problem in the Estonian military is that it has not yet decided whether it will be an army of

inductees or a professional army. The military commander, Vietnam veteran Alexander Einseln, is hesitant. Lukkari, on the other hand, is not. An army of inductees is the only way for a small nation to go. For now, the military is based on inductees who serve for a year. Students are exempt, however, so that an important part of the prospective officer's material is lost. Due to lack of funding, only half the contingent of inductees is placed for actual military service. Some are sent to the frontier guards where they receive six weeks of military training. The rest go to the police and other civilian assignments.

Concrete in Sewers

As the Russians were leaving the country, they sacked and plundered the bases. Among other things, they filled the sewers with concrete. Putting these facilities back in operating condition will require money from an already strained budget. But the human resources are good and the young ones, in particular, are anxious to learn the art of defense. Know-how among officers, on the other hand, is greatly lacking. A reserve officers' school is one of the things Col. Lukkari wants.

The officers are willing to learn, however, except the older ones who were trained in the old Red Army. They believe the Finnish Army has nothing to teach them.

No More Dangerous Than Helsinki

There are also several thousand retired Russian officers in the country and they all have weapons at home. They are a significant risk factor, according to Lukkari.

The older generation of Estonians are still greatly influenced by the old Soviet system. The young people, on the other hand, are more advanced. It is primarily they who are putting life into business life.

CAUCASIAN STATES

Armenia Begins Fall Conscriptions

944K0361C Yerevan *RESPUBLIKA ARMENIYA*
in Russian 2 Nov 93 p 1

[Unattributed article: "Autumn Recruitment Begun"]

[Text] The autumn recruitment into the national army began in Armenia yesterday. As the State Minister of Defense, Vazgen Sarkisyan, who heads the Republic Recruitment Commission, said, "The future of Armenia depends on this year's recruitment."

A SNARK [Armenian press agency] correspondent was told by the Republic Ministry of Defense that some of the recruits will be sent to subunits of the Russian Army stationed in Armenia and also Russian Border Troops guarding the borders with Turkey and Iran.

According to information from foreign military specialists, the National Army of Armenia, which began to form a year ago, is now the most powerful in the Transcaucasian Region.

"We have done everything possible to fulfill the autumn recruitment quota by 100%," Prime Minister Grant Bagratyan said recently. In his words, "in the next few months the National Army of the Republic will be fully supplied with uniforms and everything necessary."

Abkhaz Fortifications Along Inguri River

94UM0090B Moscow KRASNAYA ZVEZDA
in Russian 19 Nov 93 p 2

[Article by Vitaliy Alekseyev and Sergey Prokopenko: "Fortifications Raised in the West. People Abducted in the East"; "Possible Exacerbation of Ethnic Problems in Georgia"]

[Text] The commander of internal troops of Georgia, the chief military advisor Maj-Gen Vladimir Chikovani announced the construction of strong fortification structures by the Abkhaz side on the west bank of the Inguri river. Evidently the repeated statements of the Georgian leadership on the Abkhaz problem, as well as the presence of significant forces of government troops in the region, have forced the Abkhaz side to see to their own security in this way. However, in the opinion of independent experts, even if this is the case, combat actions on the border of the Inguri river will not be able to start in the near future due to autumn roadlessness.

However the eastern regions of the republic, inhabited primarily by Azeris, may become a new "painful" point in Georgia. In particular, the situation has been exacerbated in the Marneuli, Volnisi, and Dvonisi regions. Several incidents of abduction of persons for purposes of ransom have become the cause of unrest. There was even talk of mass resettlement of Azeris from these regions to the territory of Azerbaijan, and this is roughly 150 thousand people.

According to the leader of the regional administrative service in the apparatus of head of state Timur Pipiya, in the Marneuli region a band is arming which recently has abducted several persons for ransom, including the director of one of the farms of Alnakhverd Umatov, who enjoys great prestige among the Azeri populace in the region. This was the last straw. A protest action and meeting was held outside the Marneuli government building, and six persons proclaimed a hunger strike. They demanded an end to the uncontrolled actions, release of the abducted, and an operation to destroy the bandits, and also a visit from Eduard Shevardnadze to the region. The populace of the region is certain that these crimes are ethnic in nature and have the purpose of provoking a mass exodus of Azeris from Georgia.

In this regard, the First Deputy Ministry of Security of Georgia Avtandil Ioseliani and Timur Pipiya have gone to the Marneuli region. According to him, the abducted persons have been released and the hunger strike ended. The Georgian leadership is planning measures to destroy the criminal groupings.

SPACE INDUSTRY

Funding for Priority Space Facilities

947Q0023A Moscow KOMMERSANT DAILY
in Russian 6 Nov 93 p 2

[Article by Nikolay Podlipskiy and Ilya Bulavinov: "State Support for Space Industry: The Leaders of National Rocket Industry Have Been Determined"]

[Text] The promise of government support for enterprises of Russia's rocket and space complex made by Viktor Chernomyrdin during his visit to the Energiya Research and Production Association may be kept in the very near future. Yesterday the government received the draft Council of Ministers decree drawn up in the Ministry of Defense and the Russian Space Agency, "Measures for State Backing for Russia's Space Activity and Support for National Rocket and Space Industry."

The elaboration of drafts of clearly expressed "industry" decrees of the government has in recent years been a most widespread practice to solve the problems of individual enterprises. In this sense the document prepared in the Ministry of Defense and the Russian Space Agency is no different from others drafted in other ministries and departments. It is proposed, for example, to allocate to the Ministry of Defense R120 billion for clearing the arrears in payment for series supplies of space equipment and research, development, testing, and engineering. In addition, the demand for the establishment of tax-free minimum remuneration in the amount of eight (instead of four) times the minimum wage is repeated. And, considering the great amount of R&D in the industry, the document includes a proposal for the exemption from taxes of part of the profits channeled into the funding of this work.

At the same time the relatively high technological level of Russian space industry induced the authors of the draft to incorporate into the document a number of provisions not encountered in other drafts. We are talking primarily about the "selectivity" of the proposed assistance. The document cites seven enterprises, for whose development the allocation of preferential credit is proposed. The choice of these works as priorities is easily explained: They all participate in the production of Russian space-launch vehicles—the most competitive products of Russia's space industry on the world market.

And if this money is appropriated, it could be channeled first and foremost into the creation (on the basis of the leading space enterprises) of corporations capable of realizing high-technology developments in other sectors—electronics, instrument making, and high-speed rail transport. This option of the surmounting of the current technology gap between the manufacturers of the space sector and other enterprises is justified because the sale of research-intensive technology is unlikely under Russian conditions. Besides, the Ministry of Defense also has an interest in the enterprises being accorded state support since the current space-based systems

giving early warning of a nuclear attack are in need of modernization, as are also the satellites monitoring troop movements and space communications systems.

The development of proposals for the immediate support of Russia's space sector indirectly confirms the strategic line of Russia's political leadership geared to assurance of the technological and engineering autarky of national space industry and its independence of enterprises of the CIS countries (which does not preclude Russian space firms' active cooperation with Western partners). The situation could change, for that matter, if the Russian government succeeds in winning from the leadership of the Commonwealth countries consent to the conversion of these countries' national debt into shares of stock of their industrial enterprises. The first applicants for a change of "citizenship" would obviously be the republic high-technology enterprises of the rocket and space sector.

Enterprises of Russian's Rocket and Space Industry Which Will Be Allocated Priority Credit:

- Khrunovich GK NPTs
- Samara Progress Plant
- Frunze SMO
- Perm Motor Stock Company
- Voronezh Machinery Plant
- Energomash Research and Production Organization
- Energiya Research and Production Organization

Russia's Positions on the World Rocket-Space Equipment Market

According to the estimates of Western and Russian specialists, the world market of services and commodities manufactured by the rocket and space industry is one of the most dynamically growing markets. It is quite hard to estimate its "monetary" capacity at the present time, but this even according to the most modest estimates signifies tens of billions of dollars up to the end of the century. At the same time the state of Russia's rocket and space industry makes it possible to say that its products and services may be competitive only in several sectors of this market.

Commercial Launch Market. At the present time the capacity of this sector is put at \$1.5-\$1.8 billion. The market is showing a growth trend of 5-10 percent annually, so its capacity could have doubled in 10 years. The average cost of launching a 1 kilo payload is approximately \$20,000. Depending on the weight of the satellite, the altitude of the orbit, and the type of space-launch vehicle employed, the cost of a unit launch varies within a wide range—from \$5 million to \$100 million. Almost all the vehicles are highly dependable. In accordance with international agreements, Russia is entitled to carry out eight commercial launches through the end of the

century. In addition, the market for launches of foreign satellites with the aid of mobile launch complexes, to which the restrictions on the importation into Russia of American satellites and their components do not extend, is highly promising.

Manned-Flight Market. At first sight, Russia has in this sector the most auspicious prospects connected primarily with the presence of the "Ground-Orbit" permanent orbiting complex and well-oiled transport system. This enables Russia to remain a monopoly operator on the medium and long-term manned flight market. But the "advanced" age of the Mir orbiting system (it has been operating since 1986) is forcing the crew to spend a considerable amount of time maintaining its operability, frequently to the detriment of the principal flight assignments. According to certain data, the operation of this station will have been completed in 1998. Following this, the construction of the Freedom-Mir station in conjunction with the United States is contemplated.

Market of Satellite Communications Systems. Because of the archaic nature of the national systems, this sector is growing the most rapidly. At least five national Russian communications systems involving the use of space satellites are being developed at the present time.

Applied scientific research market. Russian "converted" photographic reconnaissance craft are the most competitive in this sector of the market—their capacity for distinguishing objects on the earth's surface down to a size of three meters makes them highly competitive in mapping. Western clients' use of other spacecraft of Russian manufacture such as meteorological and remote-sounding apparatus is unlikely because of the backward componentry and low dependability. The uses of the antiquated, but reliable, Foton-series industrial satellites are the most promising.

Scientific Research Market. The financial crisis in Russia's economy has brought about the practically total wind-down of research programs. In addition, Russia's prestige was undermined to a considerable extent by the failure of the Phobos expedition. But international cooperation in a most important program—the plan for the exploration of Mars—continues at the present time.

Market for the Sale of Rocket System Technology and Components. In this sector of the market Russian industry has quite a substantial advantage in the field of the development and manufacture of liquid rocket engines and nuclear power packs. But strict compliance with all the requirements of the Missile Technology Control Regime combined with the export-control system being created in Russia is making this a very limited market. In addition, the suspension of government funding of many research efforts is causing much Russian technology to become obsolete and to lose its competitive advantages.

Seven Year Federal Space Program Approved

MK1712123093 Moscow KOMMERSANT-DAILY
in Russian 17 Dec 93 p 3

[Nikolay Podlipskiy report: "Space Program Adopted. Russian Government Approves Seven-Year Space Research Plan"]

[Text] The Russian Government plans drastically to revamp the space industry sector; Viktor Chernomyrdin has signed the decree "On State Support for and Provision of Space Activity in Russia." As a result, the number of the sector's enterprises will be reduced by two-thirds. Survivors will effectively achieve technological independence from their counterparts in CIS countries in the near future.

The decree may be divided into two parts. In the first section, which maintains a typical "sectoral" style throughout, the state promises to repay debts for research and development done this year, the procurement of quantity-production equipment, and operational costs to maintain the Baykonur space center in an amount of 164.8 billion rubles [R]. Next year, it is planned to appropriate R272.8 billion (in July 1993 prices) for these purposes. In addition, space industry enterprises will be financed according to a system adopted by the military-industrial sector: The Russian Space Agency has been given the right to make 30 percent advance payments to the developers and manufacturers of space technology. Furthermore, agency staffers have managed to succeed where defense enterprises failed—expenditures for financing the federal space program until the year 2000 will be included in the budget as a separate item starting next year.

Admittedly, a more privileged—by comparison with other industries—treatment accorded to the space industry will be instrumental in its restructuring. The second part of the document calls for drastic cuts in the number of space industry enterprises. In exchange, around 40 federal space centers will be set up to operate as government contractors for space technology production.

The government decree also provides that Russian enterprises must take efforts to assimilate the production of materials, elements, and spare parts that had formerly been manufactured by CIS countries. This confirms a momentous change taking place in the Russian government's approach to the space industry. Throughout the 36 years of its existence, the national space industry was distinguished by its isolationism (which did not rule out, however, the utilization of Western equipment). Financial constraints, however, have forced the Russian authorities to look for ways of attracting Western capital. In that regard, the emerging chilliness in "space relations" with the Commonwealth countries looks entirely logical—the concentration of production in Russia gives additional guarantees that Russia will fulfill its international obligations. Moreover, this is a prerequisite for creating extra jobs.

The Russian Federal Space Program for the Period up to the Year 2000

Telecommunications, information exchange, and navigation systems. It is envisioned that to increase the number of telephone channels 20 times and to cover Russia's entire territory by multichannel television by the year 2000 by carrying out 8 state projects and 11 programs with mixed financing.

Remote-control sounding of the earth. It is planned to increase the period of warning about natural disasters to 24 hours. In addition, the period of meteorological reports' accuracy will reach 10 days (instead of the current 3).

Space technology development. It is planned to organize semi-industrial production of semiconductor monocrystals and super-pure proteins.

Manned space flights. It is planned to operate the "Mir" orbital station until 1997. Next year, it is planned to launch two scientific modules. After the station reaches the limit of its life in orbit, manned flights will take place within the framework of the project for creating the "Alpha" international station.

Spacecraft delivery vehicles. It is planned to modernize the "Proton" carrier rocket with the view to increasing the effectiveness of its guidance system and minimizing the hazardous effects of carrier rocket launches. In addition, it is planned to create the "Rus" rocket and to design the "Energia M" rocket on the basis of the "Soyuz" carrier rocket.

Fundamental research. It is planned to carry out the program for researching Mars, to conduct astrophysical research according to the "Spektr" program, and to research

Multiple-use space systems. It is planned to create the requisite materials and equipment for this kind of spacecraft. No utilization of the "Buran" system is foreseen.

Space center development program. It calls for the Russian Space Agency and the Defense Ministry to concentrate on the utilization of the Baykonur and Plesetsk space centers.

In addition, the new program contains special sections on the development of new space technology materials, the upgrading of means for controlling space objects, the development of the ground experimental base, and the enhancement of the scientific-technical potential of applied space research.

DOCTRINAL ISSUES

Shaposhnikov Criticizes New Doctrine

94UM0108A Moscow TRUD in Russian 1 Dec 93 p 5

[Marshal of Aviation Yevgeniy Shaposhnikov interviewed by Sergey Stupar: "Timely Interview: Marshal Yevgeniy Shaposhnikov: 'The Country Must Be United'"]

[Text] The name of Marshal of Aviation Yevgeniy Shaposhnikov became known in August 1991. That is when he, as chief of the USSR Air Force, decisively supported Russian President Boris Yeltsin and did not allow the notorious State of Emergency Committee to use the armed forces against the people. Then he was "lucky enough" to become the last USSR Minister of Defense. He then became the first and last Commander of the CIS Joint Armed Forces. In the summer of 1993, he served briefly as Secretary of the Russian Federation Security Council. However, he left that post after the former Russian Federation Supreme Soviet refused to confirm him. Today the 51-year-old Marshal, in the prime of life and ability, has been transferred by edict of B. Yeltsin to the Russian Presidential Reserve. We present readers with an interview with Ye. I. Shaposhnikov, who is running for the State Duma on the Russian Democratic Reform Movement slate.

[Stupar] Yevgeniy Ivanovich, you were an active participant in the events of August 1991. Now, after the tragic days of October 1993, what difference do you see between these two historic events?

[Shaposhnikov] In 1991, we were able to prevent the Army from being drawn into political battles. But the events of 3-4 October in Moscow showed that the Ministry of Internal Affairs lacked sufficient power. And so in that instance the use of military units, in my opinion, was forced and justified. This had to be done in order to keep the country from sliding into an abyss of civil war and even more victims. But I think that the way in which troops were used could have been milder.

As for the consequences of the events of October, it seems to me that after August 1991, in a state of triumphant euphoria, we failed to do the most important thing: We were unable to carry out comprehensive constitutional reform and as a result wound up with all the conflicts and impasses contained in the Soviet Constitution, which ultimately led us to bloody October 1993. Now we have hopes that things will get better, and the threat that Russia could break up into sovereign states has diminished. The strengthening of the executive and the president's decisive actions against attempts by certain local administrators to proclaim "new sovereignties" and territorial units offer every reason to expect that a unified Russia can be preserved.

It seems to me that preserving Russia's unity is now the most important task of the president and the future Federal Assembly.

[Stupar] One can conclude from your remarks that you support the new draft Russian Constitution, and specifically the fact that it omits the term "sovereign" with respect to the republics.

[Shaposhnikov] Yes, I support the new Constitution. Although I understand, of course, that the document is still far from perfection. But it is vital that it be adopted on 12 December. This will make the Federal Assembly itself legitimate. On the other hand, a failure to adopt the new Constitution will pose the threat of our gradual sliding toward a dictatorship of the executive branch, a dictatorship that could arise from the absence of parliamentary oversight.

[Stupar] As a marshal, what can you say about the new Russian military doctrine that was just adopted?

[Shaposhnikov] In general, I personally would not adopt a new military doctrine at this time. And I don't understand why this is being done with such haste. Judge for yourself. No one has yet devised or presented a concept of the state we want to build. And if there is no concept of the state, how can we talk about the doctrine of something that doesn't yet exist? To compare this with building a house, for example, one could ask how someone can design the bedroom or kitchen when he still doesn't have a plan for the house itself? For this reason, it seems to me that we have to start here not with a Russian military doctrine or federal security doctrine, but rather with the formulation of a concept for the Russian state. In other words, we have to decide what form Russia is to take 10 and 20 years from now. And only then should we consider a national security concept, which would include such notions as economic, environmental, federal, informational, and defensive security. This could consist of a doctrine of the state, along with doctrines for the individual areas I cited, including a Russian defense doctrine.

In my opinion, a Russian national security concept should first of all define the following: Who we are, Russia's place and interests in the world, and what poses a danger and threat to these interests. After we can understand these issues and formulate answers to them, we can then discuss a doctrine, which is to say a system of views of our interests. And then we need to devise a strategy; in other words, our actions and maneuvers to implement the doctrine for a prolonged period of time. Finally, only after all this has been done should we take specific actions, such as signing edicts, decrees, and decisions. We have now set about formulating a military doctrine without having done all the rest. On the other hand, there is also a positive aspect in this, since what was signed is not a "military doctrine," but only its basic principles. This being the case, these principles can be incorporated in a Russian national security concept when it is ready, a concept that will take into account both external and domestic factors and then be transformed into Russia's real military doctrine.

[Stupar] You are a candidate for deputy to the State Duma on the Russian Democratic Reform Movement [RDRM] slate. Why did you choose that movement in particular?

[Shaposhnikov] First, because it is a movement and not a party. I have had an antiparty syndrome since the times of the CPSU, no doubt, and I have an aversion to the very word party. Second, the RDRM's platform is rather balanced, and I like that very much. It contains neither extremism or populism. Third, I like the people who support the movement. If you look at the RDRM slate, you will see that, unlike other slates, it includes people who, as a rule, have succeeded on their own, without the support of state structures. Take, for example, Svyatoslav Fyodorov, who was able to realize his potential back during the Soviet period and enabled his team to do so. The slate also includes such universally respected people as G. Popov, Yu. Karyakin, K. Lavrov, A. Sobchak, O. Basilashvili, I. Kivelidi, O. Gazmanov, N. Shmelyov, A. German, A. Petrov, and many others.

[Stupar] Let's suppose that the RDRM clears the 5-percent barrier and you become a deputy to the State Duma. What role do you see yourself playing in that institution?

[Shaposhnikov] I would like to deal with security and defense issues. I see approaches to handling them. I also have an interest in problems associated with conversion. In my opinion, there have been some excesses here. After all, there are some wonderfully equipped military enterprises that make products that are competitive on the world market. We needn't force them to make pots and pans instead of airplanes and missiles; instead, we have to let allow them sell their military hardware abroad. The proceeds could then be used to build new production lines to produce consumer goods. In this way, without any fitful movements and shocks, we could not only solve conversion problems but also preserve these enterprises' research and technical potential, avoid giving the country hundreds of thousands of new unemployed people, and solve the "brain drain" problem.

[Stupar] You have always said that army service and work in parliament are incompatible. Now you are a candidate for deputy. Does this mean that you have abandoned your military career, or have you perhaps changed your views?

[Shaposhnikov] I have not changed my views. For this reason, as soon as the RDRM proposed that I become a candidate for deputy to the State Duma, I immediately informed Boris Nikolayevich, who, as the president and supreme commander in chief, is my direct superior. I told him that I was prepared to request a discharge from the Army. However, Boris Nikolayevich asked me not to rush. Especially since this can be done after 12 December, in the event I am elected a deputy.

[Stupar] Nevertheless, what is your current situation after resigning as secretary of the Security Council?

[Shaposhnikov] At the current time I am officially at the disposal of the Russian President and awaiting a new posting. There is a wide range of possibilities here. Since I am inclined toward generalization and analysis, I would be happy to work on strategic planning under the Russian president. At the same time, I already have several offers in this area from well-known Moscow foundations, but I haven't said yes to anybody yet.

FOREIGN MILITARY AFFAIRS

Shipboard EW Equipment of Foreign Navies

94UM0113A Moscow MORSKOY SBORNIK
in Russian No 8, Aug 1993 (Signed to press 09 Aug 93)
pp 72-78

[Article by Senior Lieutenant A. Longinov, under the rubric: "In Foreign Navies": "Foreign Navies' Shipborne Electronic Warfare Systems"]

[Text] The development of methods and techniques of armed combat at sea has resulted in the fact that electronic combat, in particular, has acquired the status of a specific form of combat at sea—electronic warfare—EW. According to the views of foreign experts, it consists of three basic components: Electronic support measures (ESM), electronic countermeasures (ECM), and electronic counter-countermeasures (ECCM). This division of EW is quite arbitrary in nature, being the basis of practically all EW measures in combat operations of ship task forces (see in greater detail MORSKOY SBORNIK No 1 1993) because existing EW systems and equipment can be used to accomplish many missions within the framework of conducting some or other maritime operations. In this article, I will examine only shipborne EW systems that are oriented toward determination of the electronic situation, disruption of an enemy combat command and control system and concealment of friendly forces, and also defense from guided antiship weapons.

However, I must initially point out that powerful aircraft carrier battle groups with developed collective defense systems form the foundation of the U.S. Navy. Therefore, the development of integrated EW systems that interact with each other within the framework of an entire aircraft carrier battle group is envisioned to increase its effectiveness. They are the new element of universal defense of an aircraft carrier battle group on a par with air defense and antisubmarine defense and are becoming an integral part of the battle group's striking power. At the same time, these trends are not characteristic for the development of the EW systems of the navies of other countries, including NATO members, where the main direction in the EW sphere is reduced to the individual protection of ships. However, in the long-term, the possibility has not been excluded that these navies will adopt the basic provisions of the new EW concept based upon the model or similar to the model adopted in the U.S. Navy.

So, I can note that at the present time the development of methods and techniques to conduct EW is moving along several different directions for the U.S. Navy and other foreign navies. As a result of this, the composition and even the technical appearances of these systems, as a rule, do not coincide, and standardization, even within the framework of the NATO Allied Navy, is nearly completely absent.

Systems to Determine the Electronic Situation

The United States is the leader in the development of shipborne radio (RR—COMINT [Communications Intelligence]), radiotechnical (RTR—ELINT [Electronic Intelligence]) and acoustic (GAR—ACINT [Acoustic Intelligence]) reconnaissance systems; that is, the conduct of passive EW.

At the present time, the AN/SSQ-108(V)1 Classic Outboard system is the primary aircraft carrier battle group COMINT system, the foundation of which is the AN/SSQ-72 COMINT and ZGTsU [Over-the-Horizon (OTH) Target Designation] equipment. The system supports interception in the primary radio communications frequency ranges, analysis, identification and direction-finding of emissions with an accuracy that is sufficient to issue an OTH target designation for a Tomahawk Anti-ship Cruise Missile in the "bearing-range" mode at a distance of up to 100 miles. In the future, it has not been excluded that the system will be augmented by equipment to conduct ACINT in the 0-100 kHz range which utilizes antennas and reception channels of organic GAS [SONAR] ship-platforms and will also be able to form maps of thermal fields using special optical-electronic reconnaissance (OER) equipment.

As a rule, Classic Outboard equipment is installed on guided missile frigate and guided missile cruiser class ships that are part of a carrier battle group which permits them, along with the aircraft carrier that is equipped with the organic Suprad [transliterated] COMINT equipment system, to form a carrier battle group direction-finding network for triangulation of bearings, thus providing sufficient accuracy. The AN/SSQ-108(V)1 system and its modification (V)2 permit them to conduct the exchange of data on the electronic situation via TACINTEL satellite communications channels not only with carrier battle group ships but also with shore-based naval forces.

The AN/SSQ-108(V)1 system, under the designation OBMU, will be installed on British Design 22 frigates beginning in 1994 which will substantially expand the capabilities of their aircraft carrier battle groups to conduct COMINT reconnaissance and, furthermore, will permit ships from U.S. Navy carrier battle groups to exchange intelligence information with British Navy ships.

The new generation of U.S. Navy shipborne COMINT reconnaissance systems is characterized by significant capabilities for the centralized processing of data and the effective utilization of that data. So, for example, the

AN/SLQ-21 system that has been developed for California Class Guided Missile Cruisers and Spruance Class Destroyers permit them to depict the current electronic situation in real time and under conditions of receiving large volumes of information from carrier battle group technical reconnaissance systems. This system is linked to the NTDS [Navy Tactical Data System] CICS [Combat Information Control System]. The new AN/SLQ-50 system that gathers reconnaissance information from carrier-based aircraft and helicopters at over-the-horizon distances has been improved even more. Just like the AN/SLQ-21, it permits the conduct of OTH target designation in NTDS CICS channels. The AN/SSQ-70 reconnaissance information collection system is also in that class.

The level of equipment of carrier battle groups with systems for determining the electronic situation permits the conduct of reconnaissance not only on their own behalf during ocean transits and in combat areas, but to provide reconnaissance data to maritime ground force formations when they don't have their own special reconnaissance and EW brigades.

Nuclear attack submarines are equipped with AN/WLQ-4 Sea Nymph special COMINT and ELINT equipment that provide the interception of electronic systems communications and non-communications signals at combat training ranges of the navy being reconnoitered and in their basing areas. AN/WLR-2(V) COMINT and ELINT equipment, that has been installed both on surface vessels and on submarines that are accomplishing identical reconnaissance missions, is being widely employed in the U.S. Navy.

As for the navies of the remaining foreign states, their COMINT equipment is primarily oriented to determining the electronic situation in a radius of up to 80 miles and the list of these systems is not long. Germany, Israel, and Italy share the lead in equipping ships with COMINT systems. Israeli Navy ships are equipped with Series 6000 automatic equipment and with TDF series direction-finders with expanded capabilities for technical analysis (TA). The CO-NEWS COMINT system is installed on Maestrale class frigates in Italy. German Navy Bremen Class guided missile frigates are equipped with ASDF HF-UHF range direction finders. British nuclear submarines, similar to U.S. nuclear submarines, are equipped with CXA COMINT equipment.

Typical NATO countries navies COMINT systems consist of a panoramic search and multichannel interception and direction-finding reception portion, TA and electronic system platform identification equipment and also visual and cartographic depiction and electronic situation registration terminals. The combination of these components based on EMV [electromagnetic waves] permits them to determine the electronic situation in real time. The overall effectiveness of the conduct of COMINT reconnaissance depends on the software of these systems.

Foreign navies' ELINT systems are primarily represented by automated systems in the 0.5-4 GHz range. Among them are DR4000 and Eliza (France), FL400A (Germany), EL/L8312, NS9001, and Timnex (Israel), and Mentor-2. The list of these countries' primary COMINT and ELINT systems is cited in Table 1. The capabilities of shipborne ELINT systems based upon radar interception range depending on their sensitivity are provided in Figure 1.

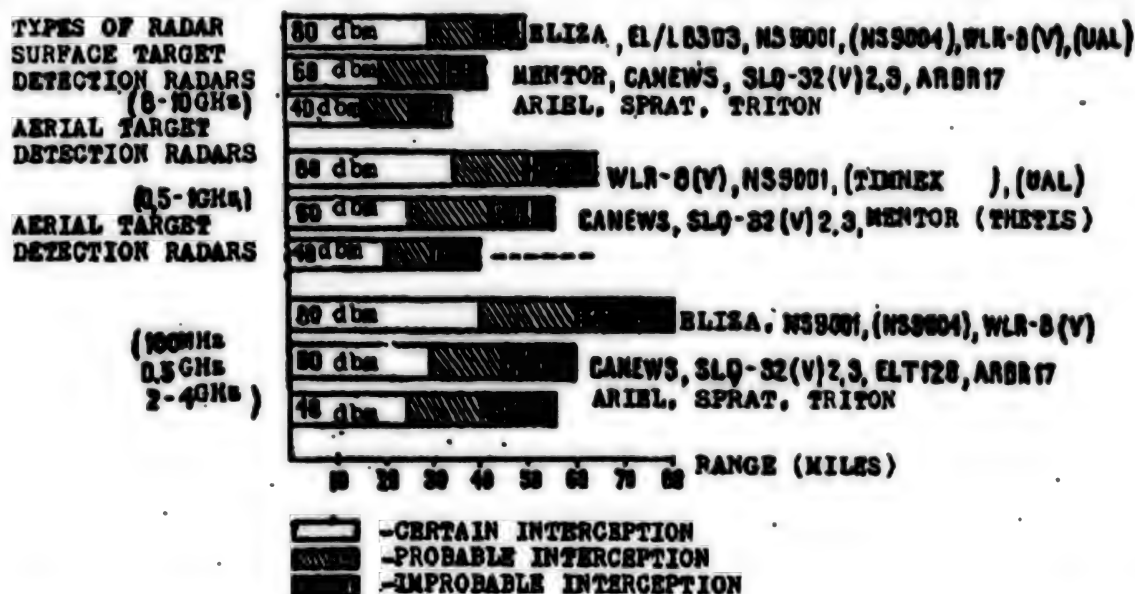
Table 1

No.	Nomenclature	Platforms	Mission	Composition, Specifications and Performance Characteristics
UNITED STATES				
1	Pod Systems	Guided missile frigates, guided missile destroyers	COMINT, ELINT, ACINT, OER [Optical-Electronic Reconnaissance]	
2	Classic Outboard	Guided missile frigates, guided missile destroyers (36 ships have been equipped)	COMINT and Over-the-Horizon Target Designation	SSQ-72, SRD-19 antenna system, SLR-16 ESM Receiver (1-100 MHz), LMS TA equipment, SLR-23 ELINT direction finder, SYQ-8 identification equipment, SQQ-108(v); SSQ-72, OK-324/SYQ interaction equipment to conduct COMINT within the carrier battle group, communications equipment in the TACINTEL nets, SSQ-108(v)2—modified variant (v)1 with special Classic Harvester software
3	SLQ-21	Spruance Class Destroyers, California Class Guided Missile Cruisers	A reconnaissance information collection and processing system within a carrier battle group that is linked to the NTDS CICS [Combat Information Control System]	

Table 1 (Continued)

No.	Nomenclature	Platforms	Mission	Composition, Specifications and Performance Characteristics
4	SLQ-50	Aircraft carriers, ships with the Aegis Air Defense System	A reconnaissance information collection and processing system from carrier-based aircraft on the over-the-horizon situation	
5	SLQ-70	Carrier battle group ships	Timely reconnaissance information collection system	
6	WLQ-4 Sea Nymph	Sturgeon Class nuclear submarines	COMINT and ELINT	0.5 kHz - 20 GHz range, USK-20 computer
7	WLR-8			
	Mod (V)1	Nuclear submarines	COMINT and ELINT	55 MHz - 18 GHz range
	Mod (V)2	Los Angeles Class nuclear submarines	COMINT and ELINT	550 MHz - 20 GHz range
	Mod (V)5	Trident ballistic missile system nuclear submarines	550 MHz - 20 GHz range	
GREAT BRITAIN				
8	CXA	Nuclear submarines	COMINT	Direction finding, 5 kHz -100 MHz range
9	Timnex 4 CH	Primary classes of surface combatants and submarines	ELINT	0.5 - 18 GHz range
10	SADIE	Main classes of surface combatants	Technical analysis and identification	Stores up to 1,000 types of radar signals in memory. Identification time - 0.1 second
11	Mentor-2		ELINT and over-the-horizon target designation	0.5-40 GHz range
GERMANY				
12	ASDF	Bremen Class Guided Missile Frigates	COMINT	1.5 -32 MHz range, PST 1288 computer
13	FL 400A	Guided missile frigates	ELINT	0.5 - 40 GHz range; automated
ITALY				
14	CO-NEWS Maestrale	Guided missile frigates	COMINT	1.5-32 MHz range, automated
15	ELT128		ELINT	1.5 - 500 MHz range, automated
ISRAEL				
16	S 6000	Hydrofoils	COMINT	20 - 500 MHz range, automated
17	TDF205	Hydrofoils	COMINT	20 - 500 MHz range
18	TDF230	Hydrofoils	COMINT	20 - 30 MHz range, automated
19	EL/L8312	Hydrofoils, corvettes	COMINT	EL/L 8312 ESM system, EL/L 8320 spectrum analyzer, EL/L 2610 processor, EL/L 3570 terminal, 60 MHz - 40 GHz range
20	NS 9001 (1982)	Hydrofoils, submarines	COMINT, cartographic, Electronic situation	0.5 - 18 GHz range
21	Rasad	Hydrofoils	Technical analysis, registration	
FRANCE				
22	DR4000 (1985)	Aircraft carriers, destroyers	ELINT	0.5 -20 GHz range, automated
23	Eliza	Guided missile frigates	ELINT	0.5 - 20 GHz range, automated

Figure 1. Capabilities of Shipborne ELINT Systems Radar Interception Capabilities Depending on Their Sensitivity



Remarks: For submarine systems, intercept ranges are 30 percent lower than those cited (given in parentheses)

Systems for Disrupting Enemy Combat Command and Control Systems and for Concealing Friendly Forces

There are two independent, although also interrelated, missions within the framework of "electronic warfare". To accomplish these missions, U.S. Navy experts developed concepts for the development of enemy command, control, countermeasures (C³CM) systems and "Concealment and Deception" (C&D) electronic deception at the end of the 1970's - beginning of the 1980's.

I need to point out that carrier-based EA3B aircraft, that are capable of dispensing effective active and passive jamming against ground-based, shipborne and aircraft radars, are the primary electronic countermeasures and electronic deception systems in U.S. Navy carrier battle groups. Nevertheless, onboard systems are employed on ships of the U.S. Navy and of the navies of a number of other countries. They are used to equip ships, primarily large displacement ships, which are quite difficult to cover with passive jamming.

The missions of active deception and concealment of carrier battle group ships at sea are accomplished using AN/SLR-221 C&DS and the new generation AN/SLQ-34 systems, and also through the employment of AN/SSQ-74 ICADS and AN/SSQ-91 (simulator of false radio nets) false electronic situation active simulators.

Expendable EW systems play a large role in supporting the creation of a false electronic situation, in the disruption of enemy command and control systems, and in simulating ship formations. These are first of all various buoys-simulators of ships and jammers that are dropped

from ships and helicopters. AN/SLQ-39, 41-47 systems, active simulators of false radio nets and radars on AEV, AED, and CAD flotation devices. TOAD towed systems for the interception and distortion of the relay of radar signals and AN/SLQ-49 Rubber Duck inflatable corner reflectors that were developed in Great Britain are utilized for these purposes. In the future, the employment of special unmanned air vehicles (UAVs) to simulate a false electronic situation and formations and to create jamming in enemy command and control channels has not been excluded; (for example, the LODED UAV that was developed at the beginning of the 1980's).

The AN/SSQ-82 MUTE system, that accomplishes electronic support measures (ESM) missions and ensures electromagnetic compatibility of carrier battle group electronic systems and technical monitoring of emissions, was developed to ensure that carrier battle group ships remain undetected. It is possible that the IREPS software that has been mentioned in the foreign press and that is designed to ensure communications security and to accomplish electromagnetic compatibility missions, was developed for the AN/SSQ-82. The RCSR device for reducing their radar cross section was also developed for individual carrier battle group ships.

Much attention is also being paid to these systems in the navies of the remaining states. However, their employment is directed primarily at radar countermeasures and combating antiship weapons.

Primary efforts in the navies of France, Israel and Great Britain are concentrated on the development of deception jamming transmitters and, which is altogether not characteristic for the U.S. Navy, long range passive jamming dispensers.

Janet SAP [automated countermeasures system] (France), NS 9002 (Israel)—a false electronic situation simulator and the ELT 521 automated countermeasures system (Italy) are deception jamming transmitters. The latest Millpost Type 675(2) system has been developed in Great Britain to conceal friendly forces and for enemy ELINT countermeasures.

The Corvus and Barricade (Britain) special long-range EW launchers with a firing range of 5-12 km, SAGAIE (France), and SCLAR (Italy) dispense deception decoys

in the form of clouds of chaff and IR flare decoys. These launchers are linked to a computer that calculates the range and firing sequence of rockets that carry passive jamming to create the optimal jamming figures in this situation that simulate a ship formation. They are laid both for azimuth and for elevation.

A listing of the primary U.S. Navy electronic suppression and electronic camouflage systems is cited in Table 2.

Table 2

No.	Nomenclature	Platforms	Mission	Composition, Specifications and Performance Characteristics
UNITED STATES				
1	SLR-22 IC&DS	Aircraft carriers	Active electronic disinformation system	
2	SLQ-34	Carrier battle group ships	Privacy and disinformation system	Reception and transmission modules
3	SLQ-74 ICADS	Carrier battle group ships	Simulator of a false electronic situation	
4	SSQ-91	Kidd Class destroyers	Simulator of the communications electronic situation	
5	SLQ-39, 41-47	Carrier battle group ships	Simulation of false ship formations	Active and passive jamming buoys
6	AEB	Surface combatants, aircraft	Creation of communications and radar jamming	Reception and transmission modules on a buoy
7	AED, CAD	Surface combatants, aircraft	Simulation of false ship formations	Transmitters on flotation devices
8	LODED	Surface combatants	Creation of a false electronic situation	Radar jamming UAV
9	SSQ-82 MUTE	Carrier battle group ships	Support of electronic countermeasures and electromagnetic compatibility	Computer with special software
10	RCSR	Surface combatants	Reduction of the hull's radar cross section	
GREAT BRITAIN				
11	Millpost/Guardian Type 675 (2) (1990's)	Invincible Class ballistic missile nuclear submarines, Design 42 destroyers, Design 22 frigates	Collective masking and individual protection automated countermeasures system. Creates active decoys that simulate a ship formation on radar screens	
12	Super Barricade (1980's)	Primary classes of ships	Dispense passive jamming (infrared/decoys)	4 X 3 dispensers, Firing range = 5 km
13	Replica DLF-1	Primary classes of ships	Creation of decoys	Inflatable corner reflector
14	TOAD	Primary classes of ships	Simulation of ships and a false electronic situation	Reception and transmission device on ships
FRANCE				
15	Janet	Aircraft carriers, guided missile frigates	Radar situation coverage deception jamming transmitter. Linked to the DR4000.	
16	SAGAIE (1982)	Aircraft carriers, destroyers, frigates	Dispenses chaff clouds and IR decoys for camouflage and deception	1 X 10 launchers. Firing range = 8 km. Reaction time - 2 seconds

Table 2 (Continued)

No.	Nomenclature	Platforms	Mission	Composition, Specifications and Performance Characteristics
ITALY				
17	ELT521		Powerful deception jamming transmitter	
18	SCLAR (1983)	Maestrale Class guided missile frigates	Dispenses chaff clouds and IR decoys for camouflage and deception	1 X 20 launchers Firing range = 12 km. Reaction time - 4 seconds
ISRAEL				
19	NS9002 (1982)		Simulation of a false electronic situation	Simulates up to 256 targets simultaneously
20	NS 9005	Missile boats	Dispenses deception jamming	2 - 18 GHz range

I need to point out that the navies of foreign states have practically rejected such electronic support measures as conducting forceful suppression of enemy reconnaissance and command and control systems, since this not only reveals the location of friendly forces but also transforms ships into targets for antiradiation weapons. That is why powerful electronic systems communications jamming transmitters are not encountered in the lists of shipborne EW systems with the exception of old 1950's-1960's models (for example, the Israeli Navy's EL/K 7001).

Thus, the degree of development of ECM systems and support of electronic deception of foreign navies is adequately high. It is difficult to discuss the specific effectiveness of these systems because they are very poorly covered in the press. Judging by everything, serious problems remain in the attainment of electromagnetic compatibility in this sphere of EW, both on individual ships and within the framework of ship formations and also in the reduction of the electronic, thermal and acoustic signature.

Antiship Guided Weapons Defense Systems

Defense from antiship missiles is the primary mission of shipborne EW systems, and the overwhelming majority of them were developed to do that. The systems I am discussing are called individual protection systems or "Soft Kill" and are divided into three types: Detection and warning of missile attacks (electronic support—ESM), and dispensing active and passive jamming. As a rule, systems of all types are combined in a single ship EW complex.

The development of EW individual protection systems has been conducted for more than 30 years. The first systems with this mission appeared at the beginning of the 1960's in the navies of the United States and Great Britain and somewhat later in Israel, France and Italy.

At the present time, the AN/SLQ-32 system has been installed on more than 360 U.S. Navy ships and vessels. It has four modifications. The base model (V)1 signals the detection of antiship missile homing head radiation

and transmits a command to the Mk36 launcher that is linked to it. After interception of the homing head signal, a comparison of its characteristics with the homing head signal parameters stored in the AN/UYK-19's data base is conducted, and the selection of the passive jamming firing program is selected while considering an adjustment for velocity and wind speed. The base model is installed on transports and small auxiliary ships. Model (V)2 is similar in design to the base model but has a broader range of received frequencies (0.5-20 GHz) and is installed on destroyers and frigates. At the present time, the AN/SLQ-32(V)2 is being replaced by (V)3 which is additionally linked to the Sidekick ECM system (noise, pulse, and combined). It has a range of 8-20 GHz and a radiated output of up to 1.25 MWt, in a pulse operating on dispersed phased array antennas on many ships of these classes in the U.S. Navy, (Perry guided missile frigates and Spruance destroyers). This system is installed on many battleships, cruisers, and guided missile destroyers of various designs. The AN/SLQ-32 (V)4 is replacing the AN/SLQ-29 system. It has similar specifications to the (V)3 with certain design improvements. On the whole, the AN/SLQ-32(V) systems are capable of detecting surface ship airborne target detection radars at ranges of 35-50 miles, surface ship navigation radars—at 20-33 miles, and aircraft radars—up to 60 miles. The system is capable of providing data simultaneously on 35 targets with an active jamming reaction time of no more than two seconds, thanks to the AN/UYK-19 computer.

At the present time, the AN/SLQ-32(V) system is the EW system with the greatest level of integration. All of the remaining similar types of modern systems are only a combination of individual systems that have frequently been developed by different firms that are only sometimes combined based on a single automated control system. This class of EW equipment includes the AN/SLQ-29 individual protection system that is currently in the inventory of 12 U.S. Navy aircraft carriers. It consists of the AN/WLR-8(V)4 ELINT equipment that is linked with AN/SLQ-17(V)2 radar-homing antiship missile active jamming equipment and with four SRBOC Mk36 passive jamming dispensers that are located along the side. The radar and IR flare decoys that are fired

using this launcher that drift or descend on a parachute create a false situation in the radar (8-20 GHz) and thermal (3-10 micron) fields. This permits paralysis of the operation of enemy radars which operate without an operating frequency shift. Furthermore, the Mk36 launcher uses Mk 182 and Mk 214 projectiles to make chaff clouds that divert antiship missile homing systems in direct proximity to the covered ship and MK 216 projectiles at large distances (to divert antiship missile homing systems). The AN/SLQ-29 system is capable of effectively operating under conditions of a complicated electronic situation that is characterized by the simultaneous operation of several hundred radars (friendly and enemy radars). Based upon the assessments of EW experts, it significantly lags behind the AN/SLQ-32(V) system (including in jamming reaction time).

The British Navy's experience combating antiship missiles during the 1982 Falklands Conflict became a powerful stimulus to the integration of EW equipment into an individual protection system. Nevertheless, during the 1980's, no world navy managed to develop a system similar in effectiveness and low cost to the U.S. Navy's AN/SLQ-32(V). Right now, integrated EW systems like the AN/SLQ-29 are in the inventories of only a small number of foreign navies primary classes of ships. The French Navy is installing on future ships of the primary classes (aircraft carriers and guided missile frigates) NEWSY EW and Sapiens-3 complexes. They consist of TMV 433 ELINT equipment (ARBR16 electronic support and DALIA technical analysis equipment), the ARBR17 and ARBB33 automated countermeasures systems, and the DAGAIE and MAGAIE passive jamming dispensers. Italian ships, depending on their displacement, are armed with NEWTON (large displacement ships) and FARAD (small ships) complexes, which include ELT121 and 211 electronic support equipment, ELT261 technical analysis equipment, noise (ELT318, 361) and deception jamming (ELT521) automated countermeasures systems, and also SCLAR passive jamming dispensers. The equipment composition of these complexes can be changed for each specific ship. Furthermore, INS-5 complexes are in the inventory of the Italian Navy that include ELINT and low power noise and deception jamming automated countermeasures systems.

At the present time, the previously mentioned Type 675 (2) (Millpost/Guardian) radar and antiship missile countermeasures system that is linked to the Abbey Hill ELINT equipment and also the UAF-1 EW complex (as part of the Cutlass ELINT and Cygnus automated countermeasures system equipment that are linked with Sea Wolf passive jamming and antiaircraft missile launchers), are entering the inventory of the British Navy's Invincible Class antisubmarine warfare aircraft carriers, destroyers and guided missile frigates. Israel is paying serious attention to equipping its corvettes and missile boats with EW systems. These are the SEWS/RAN1110 systems and the NS 9003/05 and EL/L8300 equipment; they are capable of conducting ELINT reconnaissance under complex electronic situations and of dispensing active noise deception jamming against several targets simultaneously.

All of the systems listed above have high capabilities to determine the tactical electronic situation because they are linked with special digital computers and technical analysis equipment (radar signal data bases). On the whole, the jamming reaction time of passive jamming dispensers and weapons is reduced to tenths of a second due to rapid detection of threats and timely issuance of commands to tune automated countermeasures systems. The employment of multichannel automated countermeasures systems that operate on highly effective multi-beam antenna arrays permits them to conduct suppression of several dozen targets simultaneously in combination with dispensing chaff clouds and IR flare decoys. Despite the objective advantages of integrated EW systems, the majority of ships are equipped with individual pieces of reconnaissance equipment, automated countermeasures systems and passive jamming dispensers.

Radar illumination detection and warning receivers that are adequately simple and coarse (with low sensitivity and direction-finding accuracy) are being installed on small ships and boats of foreign navies. Among them are the ARIAL DR3012 (France), the SR-1A (Norway), and Sprat and Triton (Great Britain).

EW systems that are used for individual protection of ships from antiship guided weapons are cited in Table 3.

Table 3

No.	Nomenclature	Platforms	Mission	Composition, Specifications and Performance Characteristics
UNITED STATES				
1	SLQ-29, 12 units	Aircraft carriers	Comprehensive system linked with the NTDS CICS and a UYK-20 computer	
2	SLQ-17(V)2	Aircraft carriers	Imitative jamming automated countermeasures system	7-17 GHz range, P = 0.5-1 MWts
	WLR-8(V)4	Aircraft carriers	ESM	0.5-20 GHz range

	SLQ-32 more than 360 units	Transports, small auxiliary ships	Comprehensive system, USK-19 computer	
	Mod(V)1 (1977-1978)	Same as above	Detects radar signals and sends signal to passive jamming launcher	8-18 GHz range
	Mod(V)2	Destroyers, frigates	Same as above	0.5-20 GHz range
	Mod(V)3	Battleships, guided missile destroyers, guided missile frigates	Detects radar signals and transmits target designations to a noise and imitative jamming automated countermeasures system launcher	0.5-20 GHz (ELINT) 7-17 GHz (ESM). Suppresses up to several targets simultaneously. P = 1.5 MVt
	Mod(V)4	Aircraft carriers	Same as above	Improved variant of (V)3
3	SRBOC Mk36	Aircraft carriers - auxiliary ships	2(4) X 6 launchers for firing projectiles with dipole reflectors and infrared flare decoys	

FRANCE

4	NEWCY	Aircraft carriers, cruisers, destroyers, guided missile frigates	Comprehensive system, automated	Linked with the SENIT [Système d'exploitation Navale des Informations Tactiques] CICS.
	ARBR-17	Aircraft carriers, cruisers, destroyers	ESM equipment	1-20 GHz range of 1,000 types of radar signals
	DALIA 1000	Guided missile frigates, submarines	Technical Analysis	
	ARBB-33	Same as above	Noise and imitative jamming automated countermeasures system	7-17 GHz range. P = 100 kVt. Reaction time = 0.5 second. Suppresses up to 4 targets simultaneously
	DAGAIE	Destroyers, frigates	1 X 6 (10) of chaff and IR flare decoy launchers. Distance - up to 1 km. Reaction time = 5 seconds. Radar cross section of the chaff cloud - up to 6,000 square meters. Jamming of five antiship missiles simultaneously, linked with the SAGAIE launcher	
5	Sapiens-3	Destroyers, frigates	Comprehensive system part of the ARBR 32 and DALIA-1000 (TMV434) noise and imitative jamming automated countermeasures systems	
6	ARBR 16	Surface ships, nuclear submarines, submarines	ESM	2-18 GHz range, linked to the ARBR 32 automated countermeasures system

ITALY

7	FARAD	Small displacement surface vessels	Comprehensive system consisting of the ELT123, 216, ELT 361, 521	
8	NEWTON	Guided missile frigates	Comprehensive system consisting of the ELT211, 318, ELT521	
	ELT123, 211		ESM	2-8 GHz range
	ELT318, 361		Noise jamming automated countermeasures system	
	ELT521		Deception automated countermeasures system	
	ELT261		Technical analysis equipment	
9	INS-5		Comprehensive system	
	RQN-5		ESM	1-18 GHz range, 3,000 types of radar signals
	TQN-2		Noise and imitative jamming automated countermeasures system	6-18 GHz range

10	THETIS	Submarines	ESM	Manufactured in two versions: ELT124S radar threat receiver and ELT224S electronic situation coverage
ISRAEL				
11	SEWS/RAN 1110	Corvettes	Comprehensive system	2-18 GHz range, P = 400 Wt
12	NS9003/05, NS9003	Shimrit hydrofoils	Comprehensive ESM system	2-18 GHz, automated
	NS9005		Noise and imitative automated countermeasures system	2-18 GHz suppression range
13	EL/L 8300	Corvettes	Comprehensive system	
	EL/L 8303	Corvettes	ESM system	0.5-18 GHz range
	EL/L 8200	Corvettes	Noise jamming automated countermeasures system	
14	NS9004	Submarines	ESM	
GERMANY				
15	FL-1800C	Guided missile frigates	Comprehensive system	7-17 GHz ELINT and ESM range
16	Schalmei	Surface combatants	1 X 10 launchers of chaff clouds (4-20 GHz) and IR flare decoys	
GREAT BRITAIN				
17	UAA-1 Abbey Hill	Design 42 destroyers, Design 22 frigates	ESM	0.7-18 GHz, linked with Type 675 automated countermeasures system
18	Cutlass UAF-1, approximately 100 units	Design 23 frigates	Comprehensive ESM system	2-18 GHz range, 2,000 types of radar signals in memory
	Cygnus		Noise jamming automated countermeasures system	8-18 GHz range, P = 480 kWt
19	Manta UAH (UAL)	Submarines, nuclear submarines	ESM	0.5-39 GHz range
20	UAJ	Oberon Class submarines	Same as above	
21	Mentor	New ships	ESM and OTH target designation	1-40 GHz range
22	Shield	Surface combatants	2 X 6 launchers of IR flare decoys, range = 35-2,000 meters. Linked with the UAF-1 system	

According to foreign experts, the trend toward integration of EW individual protection systems into integrated systems and their combination with weapons systems ("Hard Kill" antiaircraft missiles and antiaircraft guns) under the single control of the air defense coordinator will be preserved in the navies of the primary foreign countries in both the near and long term.

The AN/SLQ-54 AIEWS Integrated EW System, which will begin to replace the AN/SLQ-32 system by the year 2002, is being developed in the U.S. and British navies. They propose realizing all of the latest technological achievements in the sphere of electronic system signals detection and their active suppression in this new system. The AN/SLQ-54 will be linked with systems to combat RAIDS antiship missiles and to dispense SADIS decoys.

By 1996-2000, the French Navy plans to develop the Salamandre EW system that is compatible in specifications and performance characteristics and the number of variants with the AN/SLQ-32 system. The FL1800S

Stage 11 system that will have three variants, two for surface ships and one for future U212 submarines, will enter the inventory of the German Navy in the near future. By 1996, the Canadian Navy plans to complete the modernization of the SLQ-501 system. This new system with expanded technical analysis and identification capabilities will be installed on new destroyers.

In concluding this survey of modern and future shipborne electronic warfare systems, I would like to point out that the combination of individual systems into automated systems that support the primary requirement made of them—maximum reduction of response time to electronic systems radiation—is the primary direction of the development of shipborne EW equipment.

For the U.S. Navy, this will be reflected in the future integration of operational reconnaissance systems, electronic camouflage and individual protection into a single distributed system that is linked with strike and defensive weapons systems within the carrier battle group.

And for the British Navy, this trend is being determined by the development of the EWCP electronic warfare special control processors systems and EWC system for Invincible Class antisubmarine warfare aircraft carriers and 12 Type 42 guided missile destroyers which include: The OBMU (AN/SSQ-108(V)1) COMINT system, the Type 675(2) automated countermeasures system, and also ELINT systems and passive jamming dispensers.

The development of EW systems will be one of the priority directions in the development of foreign navies weapon systems in the long term. As a result, it is interesting to point out that the opinion exists in U.S. naval circles and in military literature that the first World War at sea was won by navies that had superiority in artillery, second—superiority in carrier-based aircraft, and modern armed conflicts will be won by the side that has superiority on the air waves.

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Discussion of U.S. SUBACS System

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[Article by Captain 1st Rank V. Spiridonov, candidate of economic sciences: "The Planned SUBACS Combined Radioelectronic System for U.S. Navy Submarines"]

[Text] In 1980 the U.S. Navy began working on the SUBACS (Sub Advanced Combat System), a projected, combined radioelectronic system for submarines (or automated tactical control system—ASBU). The program involves combining into a single system the submarine's radio-electronic equipment for communications, navigation, sonar, and weapons and equipment control facilities. This will achieve for the first time the principle of a system with a distribution structure, at a practical level. We know that this principle requires functional and topological decentralization. The degree to which this is achieved depends upon the state of perfection of the basic system used, the processors, electronic computers and software, as well as upon the organization and handling capacity of the data transmission lines.

The program was initially divided into two stages. The first, covering the 1980's, involved combining the on-board radioelectronic facilities into a single system by developing a common data transmission line for the submarine. During the second stage, to be carried out in the 1990's, it was planned to improve the electronic gear, the data transmission lines and the software.

In 1983, under the research and development program, it was decided to build three versions of the system: The SUBACS Basic, SUBACS A and SUBACS B; that is, a

basic version for the Los Angeles-class nuclear submarine and a future version for the Sea Wolf-class nuclear submarine.

Due to the difficulty of the mission, the program was adjusted and refined considerably during research and development. The greatest difficulties in implementing the program involved the creation of a fiber-optic data transmission bus and devices for linking it with the computer processors, which led to delays and resulted in the creation of the AN/BSY-1 system using a bus consisting of a coaxial cable for Los Angeles-class submarines and the AN/BSY-2 fiber-optic system for the projected Sea Wolf-class submarines. In general, this approach reduced the degree of technical risk in the practical implementation of new concepts and the most advanced technologies.

It is planned to use the standard AN/UYK-43, AN/UYK-44 and AN/UYK-7 computers, and AN/UYK-1 and AN/UYK-2 processors in the AN/BSY-1 system. It will contain a total of 100 general-purpose and 50 specialized processors (see drawing [not reproduced]).

It is believed that the AN/BSY-1 system will make it possible to increase the target detection capabilities of the sonar system on the Los Angeles-class submarine. IBM is the main contractor for producing the AN/BSY-1. It has signed a contract for the production of 24 sets of the equipment.

The AN/BSY-2 system will differ from its predecessor in that it will have a fiber-optic data transmission bus, 200 processors and improved electronic computers, and a greater degree of incorporation of the principle of a distribution structure and decentralized control.

At the same time (according to the American press), technical defects detected in 1991, increased costs and an increase in the time required to develop an improved modular signal processor, the EMSP, have placed the program for creating the AN/BSY-2 SUBACS system, based on the EMSP, into jeopardy.

The AN/BSY-2 automated tactical control system processor is designed for the high-speed processing of signals coming from various submarine facilities—sonar, radar and radioelectronic warfare—and transmitting them to other processors and displays.

One shortcoming pointed out is the fact that the EMSP has a start-up time of 96 seconds, whereas the AN/BSY-2 system requires a 20-second start-up time, and the experts feel that this would have to have a negative effect upon mission performance by the Sea Wolf nuclear submarine.

It is also believed that the projected capacity will not be achieved for this processor, which could necessitate an overhaul of the entire computer net for the AN/BSY-2 system.

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